DOCUMENT RESUME

ED 293 901	UD 025 691

AUTHOR	Williams, Barbara I., Ed.; And Others
TITLE	Designs for Compensatory Education: Conference Proceedings and Papers (Washington, DC, June 17-18, 1986).
INSTITUTION	Research and Evaluation Associates, Inc., Chapel Hill, NC.
SPONS AGENCY	Office of Educational Research and Improvement (ED), Washington, D.C.
PUB DATE	Dec 86
CONTRACT	OERI-400-85-1023
NOTE	721p.; For individual papers, see UD 025 692-717. For a related document, see UD 025 896.
AVAILABLE FROM	Research and Evaluation Associates, Inc., 727 Eastowne Dr., Suite 200A, Chapel Hill, NC. 27514 ($42.00).
PUB TYPE	Reports - Evaluative/Feasibility (142) -- Collected Works - Conference Proceedings (021)
EDRS PRICE	MF04/PC29 Plus Postage.
DESCRIPTORS	Academic Achievement; *Compensatory Education; Curriculum Development; *Educational Assessment; *Educationally Disadvantaged; Elementary Secondary Education; Eligibility; High Risk Students; *National Programs; Parent Participation; Program Effectiveness; Program Evaluation; Staff Role
IDENTIFIERS	Educational Encouragement; Education Consolidation Improvement Act Chapter 1; Intervention Education

ABSTRACT

This volume of research papers presents ideas, information, and consensus statements on compensatory education effectiveness by some of the country's leading education researchers. Section one presents a summary of proceedings of the meeting at which the researchers submitted their papers to the Conference Panel and staff of the National Assessment of Education Consolidation and Improvement Act Chapter 1. The conference agenda is also provided in this section. Remaining sections include complete papers of the contributing authors on 26 topics organized into the following five categories, each of which served as the basis for one session during the conference: (1) selecting students and services; (2) program and staffing structures; (3) curriculum and instruction; (4) parent involvement; and (5) relationship between Chapter 1 and regular school programs. The conference participants each served in one of three roles: as literature reviewers and research synthesizers; as reactors who responded to the papers written for a particular session; and as members of the Panel. The discussions among the Panel members resulted in six consensus statements relating to distribution of funds, use of funds, parent involvement, research and development, and goals of Chapter 1 services. Each paper includes a list of references. There are also tables and figures presenting data on student achievement, various compensatory programs, and participant demographics. (PS)

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DESIGNS FOR COMPENSATORY EDUCATION: CONFERENCE PROCEEDINGS AND PAPERS

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December, 1986

"This publication is based on work sponsored wholly, or in part, by The Office of Educational Research and Improvement (OERI), formerly the National Institute of Education, Department of Education, under Contract Number 400-85-1023. The content of this publication does not necessarily reflect the views of OERI, the Department, or any other agency of the U.S. Government."

PREFACE

In October 1985, the U.S. Department of Education awarded a contract to Research and Evaluation Associates, Inc., to examine the effects of alternative designs in compensatory education. The primary tasks under the contract were (1) to review the existing literature on program components that are effective in educating students in compensatory education programs and (2) to organize and conduct a meeting of scholars to identify, synthesize, and discuss implications of the literature on compensatory education effectiveness. This volume represents the culmination of those activities.

In fulfilling the requirements of the contract, Research and Evaluation Associates commissioned a number of distinguished educational researchers to prepare papers on effective strategies for the delivery of compensatory education. During the spring of 1986, the authors wrote and submitted the papers. On June 17th and 18th, 1986, the authors presented them in Washington, D.C., to a Conference Panel and the staff of the National Assessment of ECIA Chapter 1. On June 19th, the Conference Panel reviewed the implications of the research findings and presented their consensus findings to the National Assessment's staff.

Designs For Compensatory Education: Conference Proceedings and Papers permits policy makers, legislators, educators, and others to benefit from the ideas, research, and consensus statements of some of the country's leading educational researchers. This volume is organized in six parts. The first section presents a summary of the conference proceedings. Remaining sections include the complete, unabridged papers of the contributing authors.

Barbara I. Williams, Project Director
and Education Group Director

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President

ACKNOWLEDGEMENTS

This work was made possible through the collaborative efforts of many individuals. To all of the individuals involved in this project, we offer our sincere thanks and appreciation. We would especially like to thank the following:

- The advisory consultants for this project provided valuable input in the early stages of this work. We would like to say thank you to: Dr. Jane L. David, consultant, Palo Alto, California; Mr. Thomas A. Mitchell, Director of Compensatory Education, Nash County Schools, Nashville, North Carolina; and Dr. Henry L. Rose, Director of Federal Programs, Colonial School District, New Castle, Delaware.

- The authors and reactors whose work is presented in Parts Two through Six of this volume deserve commendation for providing scholarly and insightful treatment of very difficult subjects within incredibly short timelines. Special thanks are given to each of them.

- A distinguished group of scholars served as the Conference Panel. This group consisted of Drs. David C. Berliner, Larry Cuban, Edmund Gordon, Dan Lortie, Paul Peterson, and Lee Shulman. Their formidable task was to read all papers prior to the conference and listen to the discussion in order to derive general principles of good compensatory education programs. They accomplished this task with aplomb.

- The staff of the National Assessment of ECIA Chapter 1 provided valuable assistance and guidance during the life of the project. Each of the team members--Mary M. Kennedy, Beatrice F. Birman, Ronald Anson, Gilbert Garcia, Martin E. Orland, Richard K. Jung, and the Project Officer, Randy E. Demaline--helped in the formulation and expansion of concepts for the conference.

- Several staff members of Research and Evaluation Associates, Inc., deserve special recognition for their contributions to this work. Nancy Owens provided much of the structure for the conference and coordinated the review of literature in the initial stages of the project. Beverly Mason continued in the course begun by Ms. Owens and saw the conference to completion. We gratefully acknowledge her assistance in the preparation of Part One of this

volume. Finally, a very special thanks is given to support staff members Sherri Batey, Brenda White, Cynthia Williams, and Linda Bailey who worked untiringly to produce this document. Their dedicated service is greatly appreciated.

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TABLE OF CONTENTS

Page

PREFACE i

ACKNOWLEDGEMENTS ii

CONTRIBUTING AUTHORS AND CONFERENCE PANEL v

LIST OF TABLES AND FIGURES xi

PART I: REVIEW OF CONFERENCE DISCUSSION AND CONCLUSIONS.................................. I-1

Selecting Students and Services........................ I-4

Program and Staffing Structures........................ I-8

Curriculum and Instruction............................. I-10

Parent Involvement I-13

Relationship Between Chapter 1 and Regular School Programs I-14

Consensus of the Conference Panel I-16

Conference Agenda...................................... I-22

Endnotes to Part I I-24

References to Part I I-26

PART II: SELECTING STUDENTS AND SERVICES............. II-1

Poverty, Achievement and the Distribution of Compensatory Education Services.
Mary M. Kennedy, Richard K. Jung, and Martin E. Orland................................ II-3

Selecting Students and Services for Compensatory Education: Lessons from Aptitude-Treatment Interaction Research.
Penelope L. Peterson II-15

TABLE OF CONTENTS (Continued)

Selecting Students and Services: Reactions.
William W. Cooley.................................. II-63

Selecting Students and Services for Chapter 1: Reactions.
Marshall S. Smith II-71

PART III: PROGRAM AND STAFFING STRUCTURES............ III-1

Summer Programs and Compensatory Education: The Future of an Idea.
Barbara Heyns III-3

Chapter 1 Programs Reduce Student-to-Instructor Ratios but Do Reduced Ratios Affect Achievement?
Harris M. Cooper III-35

Instructional Setting: Key Issue or Bogus Concern.
Francis X. Archambault, Jr. III-59

Program and Staffing Structures: Reactions from a Quarter-Century Worker in Compensatory Education.
Freda M. Holley III-95

Program and Staffing Structures: Reactions.
Thomas C. Rosica III-117

PART IV: CURRICULUM AND INSTRUCTION.................. IV-1

Mathematics for Compensatory School Programs.
Thomas A. Romberg IV-3

Curriculum and Instruction: Reading.
Robert Calfee IV-29

Teaching Thinking to Chapter 1 Students.
Marilyn Jager Adams IV-85

Research Linking Teacher Behavior to Student Achievement: Potential Implications for Instruction of Chapter 1 Students.
Jere Brophy IV-121

TABLE OF CONTENTS (Continued)

Grouping Low-Achieving Students for Instruction.
Louise Cherry Wilkinson IV-181

Curriculum and Instruction: Reactions.
Karen K. Zumwalt.................................. IV-207

Curriculum and Instruction: Reactions.
A. Harry Passow IV-227

Vision and Reality: A Reaction to Issues in Curriculum and Instruction for Compensatory Education.
Walter Doyle IV-259

PART V: PARENT INVOLVEMENT........................... V-1

Parent Involvement Strategies: A New Emphasis on Traditional Parent Roles.
Adriana de Kanter, Alan L. Ginsburg, and Ann M. Milne V-3

Involving Parents in the Schools: Lessons for Policy.
Milbrey W. McLaughlin and Patrick M. Shields V-27

The Parent Gap in Compensatory Education and How to Bridge It.
Dorothy Rich V-47

PART VI: RELATIONSHIP BETWEEN CHAPTER 1 AND REGULAR SCHOOL PROGRAMS............................. VI-1

The Coordination among Regular Classroom Reading Programs and Targeted Support Programs.
Richard L. Allington and Peter Johnston VI-3

Chapter 1 and the Regular School: Staff Development.
Gary Griffin VI-41

Chapter 1 and Student Achievement: A Conceptual Model.
Maureen T. Hallinan VI-59

Chapter 1: The Choices for Educators (Reactions).
Michael J. Gaffney VI-79

TABLE OF CONTENTS (Continued)

The Relationship between Compensatory Education and Regular Education: Reactions.
Donald R. Moore VI-103

The Relationship Between Compensatory Education and Regular Education: Reactions.
Richard A. McCann VI-121

LIST OF FIGURES AND TABLES

		Page
Figure II-1.	Hypothetical Regression Discontinuity Analysis	II-51
Figure II-2.	Relationship Between Family SES and Student Achievement	II-66
Figure III-1.	Number of Children Served in Head Start Summer and Full-Year Programs	III-10
Figure III-2.	Scaling Issues in the Sustaining Effects Study of Achievement Growth During the Summer	III-20
Figure III-3.	Vertical Scale Scores as a Function of Grade Level by Quartiles for the Debiased CTBS Reading Test	III-21
Figure III-4.	Vertical Scale Scores as a Function of Grade Level by Quartiles for the Debiased CTBS Math Test	III-22
Figure III-5.	The Relationship of Class Size and Pupil Achievement Based on 109 Experimental Comparisons in the Research Literature	III-39
Figure IV-1.	Pre-post Test Scatter Plot for an Individualized-independent Program	IV-8
Figure IV-2.	Pre-post Test Scatter Plot for a Mastery-learning Program	IV-8
Figure IV-3.	Aggregated Data from Becker-Gersten	IV-74
Figure IV-4.	Model for Integrating Research on Classroom Groups	IV-184
Figure VI-1.	Effective Regular Education	VI-125
Table III-1.	Summer School Availability by School Characteristics, Sustaining Effects Study, Grades 1-6, 1975-76	III-6
Table III-2.	Various Perspectives on the Pullout Findings of the Instructional Dimensions Study	III-71
Table IV-1.	Contents of Odyssey	IV-107

PART I: REVIEW OF CONFERENCE DISCUSSION AND CONCLUSIONS

REVIEW OF CONFERENCE DISCUSSION AND CONCLUSIONS

Enacted in 1965, Title I of the Elementary and Secondary Education Act (ESEA) provided financial assistance to local educational agencies for services to low-achieving students in schools with high concentrations of students from low-income families. In 1981, Chapter 1 of the Education Consolidation and Improvement Act (ECIA) replaced Title I. Although ECIA Chapter 1, as amended, changed or eliminated certain administrative requirements of Title I, it permitted local educational agencies to continue the compensatory education programs, initiated under Title I, with little change at the classroom level.

From the outset, policy makers have expressed interest in how to deliver the services funded under this legislation most effectively. A three-year Federal study mandated by Congress in 1974 (National Institute of Education, 1977), a major research study sponsored by the U. S. Office of Education (reviewed by Carter, 1984)[1], and the national aggregation of local evaluation information[2] have provided information about the program's effects.

In 1983, Congress mandated a national assessment of Chapter 1 to be conducted by the U. S. Department of Education's Office of Educational Research and Improvement (OERI)[3] and to include two interim reports and a final report. The first report, Poverty, Achievement and the Distribution of Compensatory Education Services (Kennedy, Jung, & Orland, 1986), focuses on the relationship between poverty and achievement, and the distribution of these characteristics among students who receive compensatory education services. The second interim report, The Effectiveness of Chapter 1 Services, reviews information about the effectiveness of the program.

The papers in this volume review current educational research on effective educational practices for low-achieving students and identify practices that might be applied in Chapter 1 settings. The points of consensus reached in the conference[4] in which the authors of the papers and others participated are also described in this volume.

The commissioned papers address areas important to the success of Chapter 1 programs, including:

- Selecting students and services
- Program and staffing structures
- Curriculum and instruction
- Parent involvement

- Relationship between Chapter 1 and regular school programs

Within each of these general areas, the issues addressed in the papers reflect the concerns of Congress, availability of authors, and the existence of relevant literature[5].

The conference participants each served in one of three roles. The literature reviewers were asked to synthesize the research about a particular compensatory education issue. They were directed to concentrate on the needs of students in compensatory education programs--low-achieving students in low-income areas. Conference reactors were asked to respond to the papers written for a particular session from the perspective of their own knowledge and expertise and to add their own perceptions based on research with which they were familiar. The Conference Panel was composed of six educational researchers knowledgeable in a range of education areas. The Panel was asked to derive general principles of effective compensatory education based on the papers and the discussions during the two-day conference.

The agenda for the conference and subsequent meeting of the Conference Panel are included at the end of this section.

The five general topics identified above each served as the basis for one session during the conference. The papers and conference discussions are briefly reviewed below. In Parts II through VI, all papers (with the exception of the Kennedy, et al. report) are presented in their entirety.

Selecting Students and Services

The issues raised in the first conference session served as a basis for the remaining sessions of the conference. The session was designed to review the characteristics of the students whom Chapter 1 serves and their instructional needs.

Mary Kennedy presented the findings from the first report (Kennedy et al., 1986) of the National Assessment of ECIA Chapter 1, several of which were pivotal for the conference. The first finding concerns the relationship between long-term poverty and achievement. Kennedy et al. reported, "The proportion [of 16- and 18-year-olds] behind grade level increased substantially as the number of years in poverty increased" (p. 16). In addition, the relationship between years in poverty and grade attainment persists even after taking account of characteristics such as mother's education, mother's age at time of student's birth, and average family income for the period. In addition, the National Assessment found a relationship between the concentration of low-income children in a school and low achievement.

"[S]chools serving high concentrations of poor students had greater proportions of low- achievers than schools with relatively fewer poor students (47.5 percent low achievers versus 11.9 percent low achievers). Further, the incidence of low achievers is larger among both poor and non-poor students in schools serving higher proportions of poor students" (pp. 20-22). In fact, achievement scores of all students decline as the proportion of poor students in a school increases.

This first interim report also described the characteristics of children receiving Chapter 1 services. It reported that children receiving Title I services are more likely to be poor, to be members of a minority group, and to attend public, rather than private, elementary schools. However, the authors also reported that in 1976 almost 20 percent of students receiving Title I services in mathematics and 10 percent of the students receiving reading services scored above the 50th percentile, which is considered average or at grade level. At the same time, approximately 60 percent of students in Title I schools scoring below the 25th percentile received no Title I services (p. 84). The report also reviewed available data about why many low-achievers do not receive Chapter 1 services when some relatively high achievers do and indicated that "none of [these reasons] necessarily implies malfeasance on the part of State and local officials" (p. 90). The reasons examined by Kennedy et al included: the use of teacher judgment in selecting Chapter 1 students to compensate for the imprecision of test scores; the fact that most districts limit Chapter 1 services to a few grade levels, even though most have low achievers enrolled in all grades as well as in their non-Chapter 1 schools; the objective of many districts to spread their Chapter 1 funds to a large number of students; the fact that other special programs (e.g., state compensatory education, special education) sometimes serve low-achieving students; and the fact that some Chapter 1 schools have few low-achieving students.

Penelope Peterson's paper focused on using the results from Aptitude-Treatment Interaction (ATI)[6] research (Cronbach and Snow, 1977, and Snow, 1984, as cited in Peterson) to match services to students. According to Peterson, ATI research shows that students, like those served in Chapter 1, who score low on measures of general ability, respond favorably to instruction that is well structured, that provides the opportunity for repetition, and that demonstrates or models the tasks to be accomplished.

According to a number of studies evaluating Title I and Chapter 1, the dominant form of service delivery when the program is pullout instruction (in which services are provided in a location other than the regular classroom), and achievement gains are generally positive but modest. Peterson identified a potential problem with the instruction currently provided to Chapter 1 students--instructional fragmentation. Fragmentation, according to Peterson, occurs partly as a result of the pullout structure of the program. Students often may not see a relationship between a subject taught in the regular classroom and that same subject taught in the Chapter 1 setting. Fragmentation between higher-order and basic skills also occurs, according to Peterson, because Chapter 1 students probably receive more instruction on factual information and less on the use of higher-order skills.

Peterson believes that Chapter 1 students can successfully be taught higher-order skills. Based on the results of cognitive strategy research and her own work, she contends that low-ability/low-achieving students could successfully be taught cognitive strategies such as memory strategies, elaboration strategies, comprehension monitoring, self-questioning, rehearsal strategies, planning and goal setting, comprehension strategies, verbal self-instruction and self-regulation, problem solving strategies, hypothesis generation, and study skills (p. II-36).

In addition to promoting instructional fragmentation, the pullout structure may also encourage unintended labeling and low self-esteem for students identified as low-achieving. Peterson's own research suggests that, when students are identified as low achievers, teachers are less likely to encourage them, more likely to give them easy tasks to complete, and more likely to hold low expectations for their academic success.

Peterson's concern about fragmentation and the National Assessment's findings on the characteristics of students receiving Chapter 1 services shaped the discussion that followed the presentations. Conference participants commented that they could find no support in the research for the overwhelming use of the pullout structure in Chapter 1 programs. Most felt that it had been implemented in order to create a "clean audit trail," in response to the Chapter 1 requirement that the program supplement rather than supplant the funds from non-Federal sources used to educate Chapter 1 students in the regular school program.

Conference participants were alarmed to discover that so many poor and low-achieving students do not receive Chapter 1 services. The ensuing discussion emphasized that the way that funds are distributed to schools and the way students are selected could result in many poor and low-achieving students not receiving Chapter 1 services. The dilemma begins with the fact that 70 percent of all elementary schools nationwide receive Chapter 1 funds, according to Kennedy et al. Because many of these schools are likely to have low proportions of poor, low-achieving students, Chapter 1 services may go to higher-achieving students in some schools. Lower achievers in high-concentration Chapter 1 schools, or schools that were not selected for services (e.g. secondary schools), may not receive Chapter 1 services, however.

To further illustrate the problem, Kennedy et al. presents data showing that Chapter 1 students in schools with small percentages of poor children are less likely to be among the lowest-achieving students in the larger population. These schools choose students to participate in Chapter 1 whose achievement is lower than that of other students in the school. However, the achievement of these students is likely to be higher than that of non-Chapter 1 students from districts with higher percentages of poor children. According to conference participants, the objective of serving the nation's most educationally needy students will be achieved only if program resources are targeted to those areas with very high concentrations of poverty. Conference participants generally concluded that the Chapter 1 program must be targeted more closely on those areas in order to provide services to a higher proportion of children who are both low-achieving and poor.

The conference participants also concluded that students' educational experiences would also be improved if their programs were not fragmented and Chapter 1 participants were not labeled as low achievers. Because of the multiplicity of special programs, the educational services delivered to some Chapter 1 students may be disrupted and confusing, placing special strains on children least equipped to handle such problems. Concerns over fragmentation also extend to the split responsibilities of Chapter 1 and regular classroom teachers, neither of whom may have the ultimate responsibility for the educational development of Chapter 1 students. The regular classroom teacher may abdicate that responsibility to the Chapter 1 teacher because much of the instruction in basic skills is provided by Chapter 1; the Chapter 1 teacher may believe that so little time is spent in Chapter 1 that responsibility must rest with the regular classroom teacher. This possible diffusion of responsibility for students' achievement can occur in either pullout or in-class settings.

In their reaction papers, both Marshall Smith and William Cooley recommended targeting high-poverty schools for Chapter 1 services. They described the benefits of targeting high-poverty schools and then serving the entire school: more low-achieving poor children would be assisted; good educational practices could be realized as Chapter 1 funding was employed to address school-wide deficiencies instead of focusing exclusively on a specific portion of the population; incentives could be established to encourage superior performance from all school staff; and incentives that encourage graduation could be developed and implemented for low-income students.

Smith recognized that accountability problems might arise from this approach and proposed a plan to ensure teacher accountability for Chapter 1 students.

Program and Staffing Structures

Schools choose from a variety of program designs to provide compensatory education services to their students:

- o In-class programs provide services to students within their regular classrooms.
- o Pullout programs generally provide instruction to students in a location outside their regular classroom.
- o Add-on programs provide instruction at times other than the regular school day or year (before school, after school, summer school).
- o Replacement programs provide all the services in a given subject area to Chapter 1 students, usually in a separate class including only compensatory education students.[7]

Francis Archambault reviewed the research on pullout and in-class models. He reported that the pullout model is the predominant model used in compensatory education programs but that the use of in-class programs is increasing. Archambault reported that his examination of research on the effect of instructional setting on the achievement of compensatory education students has revealed no data on whether pullout or in-class designs are more effective. His review of the literature also indicates no conclusive evidence on the cost-effectiveness of either model. Archambault concluded that there is no justification in the research literature for the overwhelming use of the pullout instructional model.

Archambault echoed Peterson's apprehension about the unintended effects of the pullout model, as reported in the literature. He identified two possible problems with pullout programs: (1) the stigma that may be attached to students who are pulled out of the regular classroom for special instruction; and (2) the lack of communication, cooperation, and coordination between the Chapter 1 instructor and the regular classroom teacher. Yet Archambault reported that these same effects might also occur in in-class settings and are related more to the insensitivity of the teacher than the instructional design. He concluded that what occurs in the setting is more important than the setting itself, quoting Leinhardt and Palley who state that effective practices, not settings, deserve the attention of educators.

Barbara Heyns reviewed the literature on the effectiveness of summer school for compensatory education students. Heyns reported that "the single most striking fact about summer programs in the United States is how little is known about them" (p. III-7). She used the findings from her own research and from the Sustaining Effects Study to document the conclusion that there is no absolute achievement loss for any group of students in the summer. However, she noted that disadvantaged students make smaller gains during the summer than do other students. Heyns concluded that the widening of the achievement gap between advantaged and disadvantaged students could be attributed to differences in summer growth.

Harris Cooper presented findings from his review of the literature on the effects of reducing student-to-instructor ratios. This work led him to two areas--class size and the relationship between instructional time and learning.[8] According to Cooper, most studies conclude that increases in allocated, instructional, or engaged time result in higher achievement. The relationships are generally higher for instructional time than for allocated time and highest for engaged time. He also reported, however, that research indicates that a "learning plateau" occurs, in which additional time has little impact on achievement (p. III-49). Little information is available about the characteristics of this phenomenon.

Cooper reported that researchers disagree over whether allocated time should be increased, given the small size of observed effects. He cautioned that increasing allocated time for Chapter 1 students would not necessarily narrow the gap between them and non-Chapter 1 students. Only increased time on appropriate tasks could give that result.

Cooper also reported on research regarding the relationship of class size to achievement. He found a positive relationship between achievement and smaller classes for students who are low-ability or economically disadvantaged--students for whom compensatory education was designed--when their class size is in the range typically seen in Chapter 1 programs. In addition, the research supports small, but positive, relationships between class size and nonachievement variables, such as teacher morale, teacher absence, teacher attitude toward students, teacher expectation for student performance, and teacher satisfaction with workload and professional growth. Cooper also found small positive relationships between class size and student attitudes toward teacher and school, self-concept, and motivation.

Cooper reported research findings indicating that there are fewer behavior management problems in smaller classes and that students are more likely to attend to their lessons. In smaller classes, teachers individualize the lessons more and there is a higher quality of monitoring and organization of activities. Even so, Cooper reported that the curriculum generally is not changed nor is instructional time increased in smaller classes.

In her reactions, Freda Holley affirmed many of the conclusions of the reviewers and reported supporting evidence from studies done in the Austin Independent School District. She provided further evidence that neither in-class programs nor pullout programs are more consistently effective for Chapter 1 students. She noted that problems of teacher autonomy and control sometimes arise when more than one adult is introduced into the classroom. Some teachers do not work well in the classroom with other adults. According to Holley, for example, the teachers in one in-class program reverted to a pullout structure whenever the backs of the supervisors were turned (p. III-101).

Tom Rosica's reaction paper was distributed at the conference but he used his conference time to present a proposal that would allow districts to plan, implement, and thoroughly evaluate experimental Chapter 1 programs.[9] Rosica argued that such programs could include school-wide projects that would serve all students currently eligible for Chapter 1, as well as many in a school who are not currently eligible.

In the conference discussion, many participants supported the need for systematically evaluating Chapter 1 programs that vary along specified dimensions.[10] Conference participants agreed that more knowledge about the effectiveness of specific instructional strategies and setting is needed.

Curriculum and Instruction

This session focused on instructional strategies in reading, mathematics, and higher-order skills. In particular, reviewers reported research findings regarding effective curricular and instructional practices in these subject areas for low-achieving students.

Robert Calfee, who addressed the reading literature, and Thomas Romberg, who reviewed studies in mathematics, expressed similar emphases in their papers. Both demonstrated a concern with the narrow definition of reading and mathematics used in the research literature and as the basis of current curriculum materials. Calfee preferred a curriculum that would promote literacy rather than one that only teaches reading, because "the literate person has acquired an approach to language that transcends the medium of print. The literate person, whether in reading or writing, speaking or listening (taking notes), is sensitive to features of the language that are invisible to the person who is illiterate" (p. IV-51). Similarly, Romberg states "if one views mathematics as things human beings do such as abstracting, inventing, proving or applying . . . there is nothing in the programs that I have reviewed that would give low-income students an opportunity to do any important mathematics" (p. IV-11). Both Calfee and Romberg criticized teacher reliance on worksheets and the resulting fragmentation of instruction. They were concerned that the lack of more conceptual approaches to instruction tends to underchallenge lower-achieving students.

Marilyn Adams discussed the teaching of conceptual skills as a separate curriculum area and presented results supporting this approach. She criticized some "thinking" programs for Chapter 1 students, on the basis of their limited transferability to other learning and the increased teaching time they require. According to Adams, a good course on thinking skills would give children from different backgrounds the critical, analytic, and organizational abilities and attitudes to make the most of the information presented to them. Others at the conference said that the teaching of thinking skills must be integrated into subject area curricula rather than provided as a separate course.

Louise Wilkinson reviewed findings related to the grouping of students for instruction. She cited positive effects that could result from homogeneous ability grouping, but she warned that negative effects might also result, such as embarrassment or negative labels attached to students, inappropriate tracking of students, and provision of less challenging content. To counter these negative effects, Wilkinson suggested that: teachers must consider each individual in a holistic manner in making assignments to homogeneous or heterogeneous groups and not hesitate to reassign students when appropriate; teachers must be fully aware of the varied grouping practices possible and be bold in implementing them; and teachers must provide instruction appropriate to their students' level of development (pp. IV-194-195).

Jere Brophy presented research findings on instructional strategies with low-achieving students. He stated that active teaching, in which the teacher actively carries the content to the student, seemed most effective for all students, especially Chapter 1 students. He reported research indicating that lower-achieving students should be taught more slowly, using drill and practice, careful monitoring of performance, and a great deal of corrective feedback. Brophy asserted that this did not mean that only lower-order skills should be taught to these students but that it is necessary to present explicit models and provide opportunities for cognitive strategy training, particularly for Chapter 1 students who seem not to acquire those skills easily.

Conference participants noted that Brophy's findings seemed at variance with the "underchallenging" notion articulated by Calfee and Romberg. Karen Zumwalt was concerned about the apparent conflict between the instructional goals expressed by Romberg and Calfee and those of most school districts. She questioned whether policy makers could envision educational goals that are based on something other than test scores. Zumwalt was concerned about separating instruction and curriculum into two separate domains. She charged that this dualism has led to the "current situation where an instructional strategy appropriate to certain kinds of content and objectives usually measured on standardized achievement tests has come to define the curriculum for too many students" (p. IV-220). Brophy was also concerned that the materials and training available to teachers are inadequate to permit them to teach the type of content important to Romberg and Calfee.

Harry Passow's reaction paper noted an inattention in the literature reviews to individual diversities among students, including cultural, gender, and economic differences. During the ensuing discussion, the reviewers noted that little new research has been conducted on the topic during the past 10 years. While these differences were a focus of research in the 1960s, recent research has focused more on similarities among children. Richard Allington, for example, noted a shift in the literature from cultural differences to neurological bases as an explanation for reading failure. The conference participants agreed that the individual differences that Chapter 1 students bring to the classroom warrant attention; they were concerned, however, about how the recognition of differences might be introduced in classrooms. They cautioned against emphasizing those differences, fearing that they might result in qualitatively different curricula that serve only to heighten the differences among groups.

Parent Involvement

Title I mandated the involvement of parents in project governance. The relaxation of the parent involvement requirement under Chapter 1 has relieved school districts of this particular form of required involvement by parents, but some form of parent involvement is still required under the law.

Recent literature indicates the importance of parent involvement in education (see U.S. Department of Education, 1986; Collins, Moles and Cross, 1982; Epstein, 1983; and Trinity College, 1984). The authors in this session described the roles that parents of compensatory education students can play in improving their children's education.

Milbrey McLaughlin identified two forms of parent involvement--advisory and collaborative. She cited studies concluding that, in general, the Parent Advisory Councils (PACs) mandated by Title I were not effective in involving parents in active and meaningful ways. McLaughlin noted that the community context strongly influences parent involvement patterns. For example, the involvement of minority parents in PACs was greatest in areas where large, stable groups of minority parents already existed.

McLaughlin described two forms of collaborative parent involvement: school-based involvement in which parents serve as classroom aides or school volunteers, and home-based involvement where parents serve as tutors or educational role models for their children. She reported mixed results from school-based involvement of parents and noted that these strategies could increase the disadvantaged status of low-income parents "relative to their more advantaged peers" (p. V-33). Middle-income parents often gain new knowledge and skills as a result of these strategies while low-income parents do not. She said that the results from home-based strategies where parents have acted as tutors in the home have been effective in raising the achievement levels of low-income students. These results, though, are strengthened when teachers and administrators value parent involvement.

Dorothy Rich described a home-based program that has been installed in 35 sites across the country. The program of the Home and School Institute provides parents with specific techniques and activities that are designed to foster their children's learning. The activities in the program are tied to everyday activities that children can carry out in the home. According to Rich, the program leads to increased academic achievement and improved student attitudes.

Adriana de Kanter, Alan Ginsburg, and Ann Milne also provided support for home-based involvement of parents. In his presentation, Ginsburg identified student characteristics parents can influence: student values, behavior in school, use of time, and access to educational resources outside the school. The de Kanter et al. paper cited studies supporting the importance of these characteristics in improving achievement. The authors also identified ways parents can work with their children to promote these characteristics. The authors concluded by stating that "there are behaviors available to all parents that can make meaningful contributions to educational achievement. These behaviors involve parents' time use, parents' monitoring of their children's time use, and parental inculcation of values" (p. V-15).

Relationship between Chapter 1 and Regular School Programs

Presenters in earlier sessions cited the fragmentation that can occur when an identifiable program like Chapter 1 operates in a school. Exploring this issue further, researchers in this session examined the relationship between the regular school program and Chapter 1.

Maureen Hallinan examined the literature to find explanations for the differential success of Chapter 1 programs across grades and subjects. She described Chapter 1 programs as a form of within-class ability grouping intended to gear the content, level, and pace of instruction to the students in the group. Hallinan presented a conceptual model showing that the effects of ability grouping on student achievement are transmitted through two processes--instructional and interactional (p. VI-65). She divided instructional processes into "quantity of instruction" and "quality of instruction." She hypothesized that students in Chapter 1 reading programs may receive less total reading time than students outside the programs because Chapter 1 students often receive compensatory education services while non-Chapter 1 students are participating in instruction that includes reading exercises (e.g., social studies or science). Hallinan concluded that the quantity of compensatory instruction provided to Chapter 1 students may not be enough to influence achievement over time. She also noted that teachers use different techniques when teaching low-ability students (e.g., more memorization and rote learning, less teacher-student interaction, and less interesting materials). These techniques may also influence the achievement of Chapter 1 students.

Hallinan identified three factors under the interactional-process component of her model--teacher expectation, labeling, and peer influences. She noted that these factors complement those that Peterson introduced earlier in the conference. The lowest-achieving students may be more vulnerable to the negative effects of these interactional processes than higher-achieving students, thus explaining why services appear more effective for the high-achieving student.

Richard Allington and Peter Johnston examined the issue of instructional coordination between regular school and special programs. The few studies focusing on coordination between targeted programs and between special programs and the regular school program found that coordination is important to children's learning (p. VI-31). However, they were unable to find studies that emphasized coordination in the operation of special programs.

Allington and Johnson stated that Federal policy makers have often formulated program regulations on the faulty assumption that the children in targeted programs have different instructional needs, that the program targeting categories are exclusive (e.g., limited English proficient and educationally disadvantaged), and that the clients for each categorical program can be reliably identified and assigned. They recommended focusing more attention on the quality of services and the similarity of instructional needs among categorical programs.

Staff development should be provided for all who are responsible for the education of Chapter 1 students, not just the Chapter 1 staff, according to Gary Griffin. He suggested that "staff development should logically be focused upon comprehensively enhancing the educational opportunity of students identified as eligible for Chapter 1 services...[by providing] school-wide staff development [that] will promote coherence of approach and strategy related to all students, including Chapter 1-designated participants, and that the school is the logical unit for change" (p. VI-47).

Michael Gaffney's reaction paper identified coordination possibilities within the legislative framework of Chapter 1. After describing the legal problems of integrating Chapter 1 and other targeted programs, he said that the quality of the program and its effectiveness are in the hands of the educators. He contended that the law allows broad discretion in designing Chapter 1 pedagogical approaches (p. VI-94).

Donald Moore confirmed the lack of coordination between regular and special programs. He noted, however, that the special programs are implemented in school environments that are already fragmented. He added that the problem is not necessarily with Chapter 1 but with the basic social organization of the schools. Citing recent research, Moore described teachers as private persons who do not necessarily share perceptions about their classes, their students, or their roles within the school. Therefore, the norm in the school may oppose coordination.

Richard McCann provided three alternatives for relating Chapter 1 to effective regular education programs. In the first alternative, compensatory education is seen as basic skills remediation, an approach that is generally most effective with students who are moderately low achievers. In the second alternative, compensatory education is viewed as an alternative program based on the assumption that the regular program is inappropriate for the student. In the third alternative, compensatory education is seen as adaptive education. This approach calls for the "radical transformation of regular education and the integration of regular and compensatory resources" (p. VI-131). McCann favors the adaptive approach to compensatory education but recognizes the difficulties that might be involved in implementing it.

The discussion following presentation of these papers centered on fragmentation issues and ways of improving the quality of the overall educational experience for Chapter 1 students. Conference participants generally agreed that, in schools with high concentrations of poor students, Chapter 1 funds should be used to improve services for the entire school. Other participants cautioned that, unless additional guidelines are developed to accompany a new school-based approach to targeting, there is no assurance that new funds will serve the students with the greatest need.

Consensus of the Conference Panel

The task of the Conference Panel was to formulate general principles of compensatory education based on the research literature described by the reviewers and the reactions expressed during the two days of sessions. The Panel members did not limit their considerations to conform to the boundaries imposed by the current legal framework of Chapter 1 or the political feasibility of the various ideas and proposals discussed during the conference.

The discussions among the Panel members resulted in six consensus statements. In the pages that follow, each statement is presented along with the factors that the Panel used in arriving at consensus.

1. FUNDS SHOULD BE CONCENTRATED ON SCHOOLS IN NEIGHBORHOODS WITH HIGH PROPORTIONS OF CHILDREN LIVING IN POVERTY. FUNDS SHOULD NOT BE CUT OFF FROM THOSE SCHOOLS WHEN AN INCREASE IN ACHIEVEMENT IS DEMONSTRATED.

The Conference Panel was concerned about three findings from the first report of the National Assessment of ECIA Chapter 1: the inverse relationship between the amount of time a child spends in poverty and his or her achievement; the inverse relationship between the concentration of poverty school-wide and the achievement of both poor and non-poor students; and the fact that so many children who are poor and low-achieving do not receive Chapter 1 services, while other children who are neither poor nor low-achieving receive those services. They also considered these findings in light of the positive but modest achievement gains shown in the Title I Evaluation and Reporting System reports and the Sustaining Effects Study.[11] To target limited resources more effectively on students with the greatest educational needs, the Conference Panel recommended that Chapter 1 allocations be directed only to schools with particularly high concentrations of poverty. The Panel made this recommendation with the understanding that it would probably result in Chapter 1 funding for fewer districts and schools.

The Conference Panel also responded to the funding uncertainties that districts often face. The Panel recommended that schools be assured of multiyear funding, even if achievement scores rise during the period and the proportion of low-income students decreases. They reasoned that schools need stable financial support so that adequate planning and implementation of educationally sound programs can occur. The Panel further commented that programs, even if educationally sound, have very little chance of success if they are not implemented over a sustained time period.

2. IN SCHOOLS WITH HIGH POVERTY CONCENTRATIONS, THE ALLOCATION OF CHAPTER 1 FUNDS SHOULD BE SCHOOL-BASED AND COULD BE USED TO BENEFIT ALL STUDENTS WITHIN A TARGETED SCHOOL.

The Conference Panel noted that, if only schools with high concentrations of poor students were selected to receive Chapter 1 funds, then all students in the school could receive Chapter 1 services without substantially diluting present levels of service. Conference participants cited evidence that schools with high poverty concentrations are likely to have high proportions of low-achieving students.

Focusing on schools is also a means of improving the overall quality of education at the school level. As argued by Cooley in the conference, school—rather than student—targeting would allow educators to implement improved programs within their schools and thus deliver more effective, less fragmented compensatory education to students needing such services.

Conference participants acknowledged that the stigma attached to low-achieving students is present in both pullout or in-class Chapter 1 programs. A school-wide approach resolves these problems somewhat since students would not necessarily be singled out for separate services. The panel limited their recommendation for school-wide approaches to schools with high concentrations of poor children.[12]

3. CHAPTER 1 SCHOOLS SHOULD INVOLVE FAMILIES IN ACTIVITIES THAT ENHANCE THE EDUCATIONAL CAPACITY OF THE HOME AND REDUCE THE DISSONANCE BETWEEN THE HOME AND SCHOOL.

The Conference Panel was impressed by the agreement indicated in the three presentations on parent involvement. The literature clearly suggests that the involvement of parents or families in educational activities within the home improves children's achievement. The research debate concerns, not whether the involvement is important or necessary, but what mechanisms promote that involvement most effectively.

The conference participants identified two main ways of involving parents and families in the educational process: through legislative mandate and accompanying regulations and through incentives.

The Panel suggested that districts be required to show how parents are involved in the education of their children but that no specific method be mandated. The Panel concluded that many approaches to parent involvement—advisory councils, parents working with their own children in the home, and parents working with children in the school—can be used to help parents and schools work together more effectively.

4. A SUBSTANTIAL PORTION OF CHAPTER 1 FUNDS SHOULD BE SET ASIDE TO ENCOURAGE AND SUPPORT PROJECTS THAT EVALUATE EXTANT STRATEGIES OF COMPENSATORY EDUCATION, THAT DEVELOP AND EVALUATE NEW STRATEGIES, THAT GENERATE NEW KNOWLEDGE ABOUT THE PHENOMENON OF EDUCATIONAL DISADVANTAGEMENT AND HOW TO ADDRESS IT, AND THAT DEVELOP PERSONNEL TO WORK WITH DISADVANTAGED STUDENTS.

The Panel agreed with conference participants that much is known about individual variables that seem to affect the reported achievement of students. However, little information is reported in the literature concerning what combinations of variables are most likely to promote the largest achievement gains. The Panel decided that there is not enough variability among present Chapter 1 projects to gain needed information concerning specific strategies that work most consistently with Chapter 1 students.

The Panel used Rosica's waiver proposal as a starting point for their discussion (see endnote 9 and pages III-125-126 for details of Rosica's proposal). Experimental programs resulting from the waiver would provide the variability necessary for the educational community to determine which strategies work, with what populations, and under what conditions. The Conference Panel concluded that a waiver program--encouraging experimentation with program strategies and comprehensive evaluation--would give the educational community the information it needs to identify effective program strategies.

The Panel also suggested that systematic research be done to further develop and evaluate new strategies for teaching Chapter 1 students in "Chapter 1 Research Centers." These centers would be based in schools and linked to teacher training departments or researchers at nearby colleges or universities. Using the teaching hospital as an analogy, Chapter 1 Research Centers (or Teaching Schools) would be the centers from which new and innovative practices could be developed, demonstrated, and evaluated.

Research Centers could provide teachers and administrators some portion of their training. Continuing the analogy of the teaching hospital, the Panel discussed how resident-teachers and intern-teachers could be employed in a Research Center. The additional staff would affect class size, organization of the classroom, as well as the instructional use of methods and materials. Because the facilities would be linked to universities, educators would have access to research information. Teaching Schools could experiment with differentiated staffing patterns and different approaches to the training of teachers. Information gathered from the studies conducted in Research Centers could then be disseminated to Chapter 1 projects.

The Panel strongly supported the idea that evaluation information be collected from experimental programs or programs operating in the Chapter 1 Research Centers or by conducting periodic national evaluation studies. Panel members said that the evaluations currently required from districts are not valuable to either the Federal government or the districts. The

Panel felt that allowing school districts more freedom in determining the type of evaluation that they would conduct, and not requiring that the evaluations be submitted to the state or Federal government, would result in evaluations that are more useful to the districts.

5. SCHOOLS SHOULD BE ALLOWED TO USE A PORTION OF THEIR CHAPTER 1 RESOURCES TO SUPPORT TRAINING, TECHNICAL ASSISTANCE, AND CAPACITY-BUILDING.

The Panel recognized that not all Chapter 1 schools would want to conduct experimental Chapter 1 programs, nor could they become Chapter 1 Research Centers. However, most Chapter 1 schools are interested in improving the knowledge base and teaching ability of their staff. Conference participants discussed the types and amounts of teacher preservice and inservice training needed to prepare qualified teachers for the growing numbers of students expected to need Chapter 1 services. Panelists noted that teachers are not currently well trained or equipped to employ instructional approaches shown to be most effective. To help address this problem, the Panel recommended that school level personnel be allowed some discretion over Chapter 1 funds, in order to conduct or arrange for training, technical assistance, or other activities likely to improve the effectiveness of services to Chapter 1 students.

The Panel further recommended that decisions concerning staff development be made at the school level, rather than the district, state, or Federal level. They reasoned that school personnel, such as principals and department chairs, have a better sense of the areas needing improvement than any agency staff outside of the school.

As already discussed, the literature reported at the conference favors the school as the unit from which change must be made. The Panel supported this research by recommending that all persons who work with Chapter 1 students should be involved in Chapter 1 training or the receipt of technical assistance, not just the teachers and aides supported with Chapter 1 funds. They reasoned that little is gained in improving only the instruction in the Chapter 1 setting and leaving the remainder of the student's day unimproved. According to the literature (see Brophy, Calfee, and Romberg), many of the problems cited regarding Chapter 1 are true of the regular school program as well (e.g., there is a reliance on worksheets, time is not used efficiently, students are often not aware of what they should be learning). The Panel noted a need to improve the capabilities of all personnel within the school who work with the Chapter 1 population if the education experience for those students is to be substantially improved.

6. CHAPTER 1 SERVICES SHOULD ENRICH STUDENTS' UNDERSTANDING OF SCHOOL SUBJECTS, RATHER THAN PROVIDING ONLY REMEDIATION OF BASIC SKILLS.

A number of conference participants reported research indicating that many compensatory education students are not challenged in either their regular or compensatory education classes (see Peterson), are being "systematically under-challenged" (see Smith), or are presented with less information than is made available to other students (see Hallinan). Romberg and Calfee both deplored the narrow definitions of mathematics and reading used as the basis for many curriculum materials, and Adams presented information to show that compensatory education students could be taught to use higher-order thinking skills. The Panel agreed that the remedial nature of compensatory education programs must be changed if the educational experiences of Chapter 1 students are to be improved.

The Panel endorsed the notion that compensatory education should provide enriched experiences to students who are ordinarily restricted in their opportunities to participate in activities supporting academic learning. The Panel intended that all six consensus statements contribute to the goal of increasing the availability of these enriching experiences to Chapter 1 students. Based on current research, the Panel concluded that intellectually stimulating and challenging problems can be presented to compensatory education students and can form the basis for rewarding educational experiences.

CONFERENCE AGENDA

Tuesday, June 17, 1986

SESSION I:	SELECTING STUDENTS AND SERVICES
Reviewers:	Mary M. Kennedy, Michigan State University. Penelope L. Peterson, University of Wisconsin-Madison.
Reactors:	William W. Cooley, University of Pittsburgh. Marshall S. Smith, Stanford University.
Consultant:	James Youniss*, Catholic University.

SESSION II:	PROGRAM AND STAFFING STRUCTURES
Reviewers:	Barbara Heyns, New York University. Francis X. Archambault, Jr., University of Connecticut. Harris M. Cooper, University of Missouri-Columbia.
Reactors:	Freda M. Holley, Austin Independent School District. Thomas C. Rosica, School District of Philadelphia.

SESSION III:	PARENT INVOLVEMENT
Reactors:	Alan Ginsburg, U.S. Department of Education. Milbrey W. McLaughlin, Stanford University. Dorothy Rich, Home and School Institute.

* James Youniss served as consultant to the conference on developmental issues, due to the illness of the individual selected to review that literature.

Wednesday, June 18, 1986

SESSION IV: CURRICULUM AND INSTRUCTION

Reviewers:
Thomas A. Romberg, University of Wisconsin-Madison.
Robert Calfee, Stanford University.
Marilyn Jager Adams, BBN Laboratories, Inc.
Jere Brophy, Michigan State University.
Louise Cherry Wilkinson, Rutgers University.

Reactors:
Karen K. Zumwalt, Columbia University Teachers College.
A. Harry Passow, Columbia University Teachers College.
Walter Doyle, University of Arizona.

SESSION V: CHAPTER 1 AND REGULAR SCHOOL PROGRAMS

Reviewers:
Richard L. Allington and Peter Johnston, State University of New York.
Gary Griffin, University of Illinois-Chicago.
Maureen T. Hallinan, University of Notre Dame.

Reactors:
Michael J. Gaffney, Gaffney, Anspach, Schember, Klimaski and Marks.
Donald R. Moore, Designs for Change.
Richard A. McCann, Research for Better Schools, Incorporated.

Thursday, June 19, 1986

Meeting of the Conference Panel:

David C. Berliner, University of Arizona.
Larry Cuban, Stanford University.
Edmund Gordon, Yale University.
Dan C. Lortie, University of Chicago.
Paul Peterson, Brookings Institution.
Lee Shulman, Stanford University.

Endnotes

1. The Sustaining Effects Study followed a nationally representative sample of students for three years, measuring participant characteristics and program outcomes (Carter, 1984).

2. The Title I Evaluation and Reporting System (TIERS) was mandated in 1974 and installed in 1978. While many states have retained TIERS, the implementation of ECIA in 1982 officially ended the requirement.

3. The mandate directed the National Institute of Education to conduct the study; in 1985, NIE became OERI.

4. "Conference" usually suggests a large meeting with individuals presenting papers to a sizeable audience. The conference referred to here was designed to be a "working meeting" of experts coming together to share and discuss their knowledge.

5. Research and Evaluation Associates conducted a preliminary review of the literature early in the conference preparation to identify available monographs and authors who had recently completed research on specific topics.

6. Aptitude-Treatment Interaction research examines the various results that can come from a single treatment when applied to groups with different initial abilities or aptitudes.

7. In this approach schools contribute local funds to pay for benefits that accrue to Chapter 1 students who receive instruction in smaller classes.

8. Cooper looked at "time" from three perspectives (p. III-46): allocated time, the time set aside by law, school, and/or teacher for a particular learning activity to take place; instructional time, the actual amount of time spent on academic material within the allocated time period; and engaged time, the time that students actually spend attending to lesson material (time-on-task).

9. Rosica proposed that districts that meet specified criteria be granted waivers to conduct experimental programs in Chapter 1. He proposed the following criteria: (1) 35 percent of the children in the district must come from low-income families or 50 percent of the students in the districts must score below the 50th percentile on a nationally standardized test; (2) funds

would be accounted for in accordance with Federal standards; (3) thorough evaluations would be required; (4) staff development would be available to all staff within target schools; (5) present Chapter 1 students would retain their eligibility, while some students currently ineligible would be served; (6) funding could be used to reduce class size; (7) the requirements for school-wide projects would be retained except for the matching-funds requirements; (8) the program would be planned by teachers, administrators, and parents; (9) the program would be required to include components designed to sustain student achievement beyond the academic year in which the program was conducted; (10) criteria would be developed by the district for extending the participation of schools whose achievement is raised above the eligibility criteria for up to two years; (11) funding from the waiver would be used to supplement, rather than supplant, funds from non-Federal sources for the education of the targeted students; and (12) the waiver period would extend for five years with a performance review required at the end of each year (see page 226 for more information).

10. A planned variation study, similar to the federally funded Follow Through Study, was suggested. The latter comprised 22 longitudinal studies, some of which began as early as 1968.

11. These findings are based on 1976 data, with the assumption that these patterns still hold. More evidence will be presented in the second report to Congress on the National Assessment of ECIA Chapter 1.

12. This would prevent large numbers of less needy students from receiving services.

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PART II: SELECTING STUDENTS AND SERVICES

POVERTY, ACHIEVEMENT AND THE DISTRIBUTION OF COMPENSATORY EDUCATION SERVICES

by

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Michigan State University

Richard K. Jung
U.S. Department of Education

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POVERTY, ACHIEVEMENT AND THE DISTRIBUTION OF COMPENSATORY EDUCATION SERVICES[1]

Chapter 1
Introduction

This is the first of three reports to be produced as part of the National Assessment of Chapter 1. It responds to the statutory requirement that an interim report be provided to Congress in January 1986, and is designed to provide policy makers with a demographic perspective from which to view Chapter 1. It summarizes a wide range of information about those members of the population whom Chapter 1 is intended to benefit. A second interim report, to be provided in July 1986, will summarize available information about the effectiveness of Chapter 1 and other compensatory education services. The final report from the National Assessment, to be submitted a year from now, will describe the current operation of the program—how students are selected to receive services, what services are provided to them, how programs are designed and resources allocated, and how programs are administered.

Chapter 1 Programs

Chapter 1 programs, so named because they are authorized by Chapter 1 of the Education Consolidation and Improvement Act of 1981 (ECIA), receive the largest share of Federal assistance for elementary and secondary students. Funded at over $3 billion annually, Chapter 1 constituted roughly 21 percent of the U.S. Department of Education's FY 1985 budget. Since the passage of ESEA, Title I, 20 years ago, Federal investments for this program and its successor, Chapter 1 of ECIA, have totaled over $45 billion.

Chapter 1 supersedes Title I of the Elementary and Secondary Education Act of 1965 (ESEA), but it retains the same basic purposes as Title I. The purpose of Chapter 1 is "to continue to provide financial assistance to State and local educational agencies to meet the special needs of educationally deprived children, on the basis of entitlements calculated under Title I of the Elementary and Secondary Education Act of 1965..."[2]

Like its predecessor, Title I of ESEA, Chapter 1 is based on the premise that poverty and school achievement are related; that children living in poor households or in poor neighborhoods are more likely to have difficulty in school. Consequently, they are more likely to need extra help to compensate for the effects that an impoverished environment has had on their learning. Section 552 of Chapter 1 states that "the

Congress recognizes the special educational needs of children of low-income families, and that concentrations of such children in local educational agencies adversely affect [the educational agencies'] ability to provide educational programs which will meet the needs of such children."[3]

In keeping with this premise, the legislation allocates funds primarily on the basis of the number of school-age students from low-income families who reside in school districts.[4] Districts, in turn, must select schools to participate mainly on the basis of the low-income students residing in their boundaries.[5] After services have been established in schools, the particular students to be served within the chosen schools must be selected on the basis of their educational need, rather than on the basis of their family's poverty.

Defining Intended Beneficiaries

Since the program's inception, policy makers have debated over who should be eligible to receive compensatory educational assistance. For some, the program was to focus on poor students, regardless of their educational achievement; for others it was to focus on low-achieving students regardless of their family's income. Questions regarding who should benefit from compensatory education took on so much importance in the mid-seventies that the National Institute of Education (NIE) devoted an entire volume of its final report to Congress to that topic.[6] At that time, Congress was considering the possibility of allocating funds to districts and schools, as well as to students, on the basis of achievement. When reauthorizing Title I of 1978, Congress decided to continue allocating funds to districts and schools on the basis of poverty rates, in part because of the dubious feasibility of implementing an achievement criterion and in part because achievement criteria would effectively reward those school districts which had large numbers of low-achieving students, thus perhaps encouraging them to teach their students less rather than more. However, Congress retained the provision requiring individual students to be selected on the basis of their educational achievement.

As part of that first Congressionally-mandated study of compensatory education, NIE also found that family poverty was in fact related to students' educational achievement. Generally speaking, a youngster's chances of doing well in school were diminished if he or she came from a poor family. The association between family poverty and student achievement was not especially strong, however. There were still many poor youngsters who did well in school, and many low achievers who were not poor. On the other hand, when looking at schools rather than individual children within the schools, the association was much stronger: schools with large proportions of poor students were far more likely to exhibit lower average achievement scores than other schools.[7] This latter finding is important, given the program's requirement that schools be selected on the basis of the number of children from low-income families who reside in their attendance areas. A rather large body of research now exists confirming these findings: poverty and achievement are related both among individuals and among schools, but they are much more related among schools than among individual students.[8]

The population of intended beneficiaries for this program is often referred to as educationally deprived. Not all educationally-deprived children are eligible for the program, however, because services are not provided in all schools or grade levels. To be eligible, a child must first reside in an eligible school attendance area—usually an area with more poor students than the district's average. If the child's school is selected to operate a Chapter 1 program, the child will only be selected to participate if he or she is enrolled in one of the grade levels in which the program operates, and scores below a specified performance level on an achievement test. Thus, the child who participates is one who meets several criteria, some of which relate to circumstances, while others relate to ability or need. Because of this sequential procedure for identifying potential Chapter 1 beneficiaries, and because decisions regarding the selection of schools, grade levels, and individual students are dependent on local demographic characteristics and purposeful local policy, it is not possible to estimate the national need for this program by applying a preconceived definition of "educational deprivation" to students nationwide. In this regard, Chapter 1 differs significantly from programs such as bilingual education or special education for which it is possible, at least in principle, to estimate the total number of eligible children nationwide.

Despite these definitional problems, concerned policy makers need to know how well the program is achieving its purposes, and one of those purposes is to meet the special needs of educationally-deprived children. Consequently, policy makers often ask such question as how many eligible students there are, how many of them receive services, and are there ineligible students receiving services. Yet because student participation depends on a series of decisions made by school districts, students who participate may not be those who are the most educationally-deprived. Questions regarding how well Chapter 1 achieves its purposes may be better informed by an examination of educationally-deprived children than by an examination of eligible children.

Purpose of this Report

Rather than restrict itself to students who are eligible for services, this interim report from the National Assessment of Chapter 1 first examines all students who could be or have been called "educationally deprived"—students who are either poor or low-achieving, without regard to their residence or grade level. Only after this examination does the report focus on students who are eligible for Chapter 1 and those who actually receive compensatory education services. The report is an interim report, and is intended to provide an analytic and a demographic framework from which to view the actual operations of local Chapter 1 programs. The final report from the National Assessment, to be provided in January 1987, will describe how school districts select schools and students to participate in their Chapter 1 programs, the characteristics of the schools and students actually served by the program, and how Chapter 1 students differ from other students. It is our hope that the findings described in the final report, regarding school and student selection practices, can be judged at least in part on the basis of findings described here about the characteristics of educationally-deprived students.

Notes to Chapter 1

1. Excerpts from the Introductory and Summary Chapters are presented here. The entire document is available from The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

2. Section 552, Education Consolidation and Improvement Act, 1981.

3. In addition to the funds it provides to local educational agencies to serve these youngsters, Chapter 1 authorizes funds for state educational agencies to cover administrative costs, and it authorizes funds for services to three other special populations: certain handicapped youngsters, neglected or delinquent youth, and the children of migrant workers. The National Assessment, however, focuses on the central portion of the Chapter 1 program: grants to local educational agencies.

4. Allocations also take into account the number of children living in institutions for neglected and delinquent children, or being supported in foster homes with public funds, if these children are not already counted under the separate allocation for programs operated by State agencies for neglected and delinquent children.

5. School districts have a number of options for identifying eligible attendance areas. They may use either the number or the percent of students from low-income families, or a combination of these measures. In addition, they may include all of their schools if their attendance areas do not differ substantially in their concentration of poor children, and they may include all attendance areas in which at least 25 percent of the students are from low-income families. Finally, a school may be eligible if it was eligible in either of the two preceding years.

6. National Institute of Education, _Using achievement scores to allocate Title I funds_. Washington, DC: U.S. Department of Health, Education and Welfare, 1977.

7. A. Wolf, _The relationship between poverty and achievement_. Occasional paper produced by the Compensatory Education Study Group, National Institute of Education, 1977.

8. For a review of these findings, see Karl R. White, The relationship between socioeconomic status and academic achievement. _Psychological Bulletin_, _91_(3), 1982, 461-481.

Chapter 5
Summary and Conclusions

Federal compensatory education assistance began in earnest in 1965 with the passage of one of the Great Society programs, Title I of the Elementary and Secondary Education Act of 1965. That legislation authorized funding for local school districts to support compensatory education programs for disadvantaged students. Since 1965, that legislation has been reauthorized on several occasions, revised and refined, and even superseded in 1981 by new legislation, Chapter 1 of the Education Consolidation and Improvement Act. In 1983, this National Assessment of Chapter 1 was mandated by Congress in preparation for yet another reauthorization of the legislation, scheduled to occur in 1987. The final report from this National Assessment will describe a number of aspects of State and local practices under Chapter 1.

The legislation for the National Assessment also specified that two interim reports be produced, but did not specify their content. As we planned the overall National Assessment, we decided to use these interim reports to provide broader perspectives on Chapter 1, and restrict the final report to the specific details of Chapter 1 as it is currently implemented. With regard to the first interim report, we considered three separate, though related, goals. First, in recognition of the twentieth anniversary of the legislation, it seemed appropriate to acknowledge the population of students whose existence gave rise to the program: educationally-deprived students. Second, since a number of studies had focused on poor children recently, either identifying the causes for childhood poverty or gauging the impact their numbers could have on Federal aid programs, it seemed appropriate to examine those trends as they bear on education programs such as Chapter 1. Finally, because we had received many questions from both Congressional staff and Department of Education officials about who was actually being served by the program, the interim report seemed to be an appropriate place to present analyses of program beneficiaries. There are two versions to this question. One was: Why did the Sustaining Effects Study find then-Title I programs to be serving so many children who were not poor or low-achieving? The other was: How many eligible children are left unserved?

These three goals for this report are all related to a concept that is central to the law: that of the educationally-deprived child. Ideally, an examination of educationally-deprived children would consider a number of definitions of educational deprivation, ascertain how many children fit each definition, and then determine how many of them were provided with compensatory education. But the data do not permit a satisfying rendition of that ideal. Dry statistics about family income, education levels, races or family sizes, do not convey the web of social and psychological circumstances that surround an educationally-disadvantaged child. Yet these are the data with which we must contend.

Nevertheless, the analyses presented here have permitted a number of new insights into the phenomenon of educational deprivation. The three sets of analyses we conducted parallel the three main goals for the report.

Overview of the Findings

In Chapter 2 we examined a number of aspects of the relationship between poverty and achievement. We used two definitions of poverty: the length of time the student's family has been poor and the proportion of poor children attending a student's school. Research has shown that the families' official poverty status is only weakly related to student achievement. We found that other measures of poverty, which take into account the intensity of the poverty experience for the child, are more strongly related to educational outcomes. These measures include the length of time the child spends in poverty and the concentration of poor children attending the child's school. We found that students were increasingly likely to fall behind grade levels as their families experienced longer spells of poverty, and that achievement scores of all students—not just poor students—declined as the proportion of poor students in a school increases.

These findings are reasonably consistent with the Chapter 1 provisions. Measures of poverty concentration appear to be good predictors of average student achievement, and Chapter 1 requires districts to use such measures when they select schools to participate in the program. We also know that individual family poverty status, which does not take into account the length of time a family has been poor, is a relatively weak predictor of individual student achievement. Chapter 1 provisions accommodate this fact by requiring districts to use measures of achievement, rather than poverty, when selecting individual students to participate in the program.

Chapter 1 legislation, however, relies on official census counts of poverty to allocate funds among counties. In Chapter 3, we described the characteristics of children whose families met the official census definition of poverty as well as those who experienced long spells of poverty and those who lived in areas with high concentrations of poverty. We also examined students who were not achieving well in school. These analyses relied on separate data bases, so that it is difficult to tell the extent to which the same students were being identified by all the analyses. There is evidence that about 75 percent of non-elderly adults counted as poor by the census are experiencing medium- to long-term spells of poverty. The remaining 25 percent counted by the census are likely to be experiencing poverty spells of three years or less. With regard to the two measures of intensity of poverty experiences, children who experienced long-term family poverty and children who lived in areas with high concentrations of poverty were both more likely to belong to minority groups, more likely to live in the Southeast, and more likely to live in small rural areas. Those residing in areas with high concentrations of poverty were also more likely to reside in large urban areas, a characteristic not reported by researchers investigating long-term family poverty. We also found that children who lacked reading proficiency were more likely to be minorities, to live in rural areas or in large urban areas, and to have less-educated parents.

The preponderance of Black children, and minority children in general, among those experiencing long-term family poverty and concentrations of poverty in their communities, suggests that minorities may be experiencing a qualitatively different form of poverty than other poor children experience. Their families are likely to be poor for longer periods of time, and their communities are more likely to contain a preponderance of poor people. To the extent that students experiencing these intense forms of poverty live in different communities from other poor students, the census counts of poverty may under-estimate the incidence of low achievement in these communities.

In Chapter 4, we examined the characteristics of those students who actually have been served by Title I or Chapter 1 programs. Relative to the population of school-age children, Title I/Chapter 1 students were more likely to be poor, to belong to minority groups, to be enrolled in elementary grades, and to attend public rather than private schools. With regard to their achievement levels, our analyses suggested that the provisions regarding the selection of schools and students do not always assure that the most educationally-deprived students will be served. Nearly 20 percent of students receiving math instruction in 1976 achieved above the 50th percentile on a math achievement test, and over 10 percent of those receiving reading [instruction] achieved above that level on a reading test. Yet some 60 percent of students scoring below the 25th percentile were not receiving services.

The proportion of such less-low-achieving students being provided with compensatory education services depended in part on the population of low-achieving students available to be served by the school, and in part on the local decision to serve many versus a few children. Schools with fewer lower-achieving students were more likely to serve relatively higher-achieving students, and schools with relatively large programs were more likely to serve higher-achieving students, unless they have very high concentrations of poor students.

Though the data on which these analyses were based were old, more recent data sources indicated that similar patterns of achievement levels exist among Chapter 1 students today, and will probably continue to exist in the future unless Congress decides to restrict program participation in some way.

Conclusion

If Congress were not satisfied with the nature of students who participate in Chapter 1 programs, it could probably alter local school and student selection practices by altering one or more of the provisions of Chapter 1. Such alternatives could focus the program more tightly either on achievement or on poverty, or on both.

To focus the program more tightly on low-achieving students, Congress could define eligibility at a lower achievement percentile than has now become convention, perhaps moving from the 50th percentile to the 35th. Such an alteration would remove from the program most students who score above the 35th percentile rank, and would leave districts the option of either spending more money on those students who score below that mark or increasing the number of students below that mark who are served. Alternatively, Congress could require that services be provided to the most educationally-deprived students in the entire school, regardless of grade level, rather than permitting districts to focus on low-achieving and moderately low-achieving students within a few grade levels. This strategy may have the same effect as the first, in that services would need to be redistributed from moderate achievers in some grade levels to lower achievers in other grade levels. Finally, Congress could reduce the number of moderate achievers in the program by delimiting the kinds of schools that can participate. Since those schools with the lowest proportion of poor students are also more likely to serve higher-achieving students, Congress could limit participation to schools with, say, at least 10 percent poor students.

There are also several ways to focus the program more closely to poverty, and to do so in a way that would reflect more completely the apparent relationships between poverty and achievement. There already exists in the Chapter 1 legislation, for instance, provisions for providing special "concentration grants" to those districts that have unusually high concentrations of poor students. Funds appropriated to these districts are especially likely to provide services to students who are both poor and low-achieving. Congress could also increase the number of poor students a district must have in order to receive a Chapter 1 grant, a practice that would probably also affect the characteristics of participating schools, or it could modify the school selection procedures so that a smaller proportion of schools participated. In fact, Congress could even modify the student selection procedures to further emphasize poverty. While the evidence suggests that official family poverty status is not a good predictor of student achievement, long-term family poverty is, and researchers at the University of Michigan have developed a method for predicting which five-year-olds (kindergarten students) are likely to live in poverty when they are between the ages of six and ten.[1] Use of a student selection procedure such as that developed by these researchers would focus student selection on poverty, but could also result in more low-achieving students being served as well.

The evidence presented here suggests that any of these options is likely to move services from relatively higher-achieving students to lower-achieving students. But without more knowledge of how districts select schools and students to participate, or how they allocate resources to schools and design programs to meet the needs of their students, it is difficult to gauge how successful any of these options might be, or whether they might introduce unnecessary burdens on districts.[2] The National Assessment of Chapter 1 has initiated studies of all of these aspects of local programs, and will report its findings to Congress in January 1987. These findings may help Congress determine the future of this important program.

Notes to Chapter 5

1. Greg J. Duncan, S.N. Morgan, and W. Rogers, "A simple method for using current information to identify children who are likely to experience persistent poverty spells in the future." University of Michigan Institute for Social Research, unpublished and undated manuscript.

2. There is evidence that school districts restrict the number of grade levels served when their budgets shrink, and that they remove altogether their secondary-level programs. See Richard Apling, The influence of Title I budget cuts on local allocation decisions: Some patterns from past and current practice. Reston, VA: Advanced Technology, Inc., 1982.

SELECTING STUDENTS AND SERVICES FOR COMPENSATORY EDUCATION: LESSONS FROM APTITUDE-TREATMENT INTERACTION RESEARCH

by

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SELECTING STUDENTS AND SERVICES FOR COMPENSATORY EDUCATION: LESSONS FROM APTITUDE-TREATMENT INTERACTION RESEARCH

Introduction

In 1965 Congress passed Title I of the Elementary and Secondary Education Act which provided Federal funds to educate low-achieving children from poor families. Since that time, Title I has provided Federal funds to school districts to implement programs that meet the special needs of low-achieving, low-income children. School districts receive Chapter 1 (Title I) funding based on the number of low-income students within the district. The school districts determine the services to be provided with Chapter 1 funding and select the personnel who will provide the services. The school district and the school select the students who will receive the Chapter 1 services within the school.

Currently, Chapter 1 gives local school districts flexibility to make substantive decisions about the students that will be selected for Chapter 1 programs and the services that will be provided. Thus, districts select the grade levels to be targeted, the subject matter to be taught, the curriculum, materials, staff, and instructional program to be implemented. However, Chapter 1 does require that Federal funds must be used to provide services that "supplement" rather than "supplant" existing educational services already provided with state and local funds. Because the effectiveness of the Chapter 1 program depends on the appropriate selection of students to receive the services as well as the effective implementation of services to meet individual student needs, two critical questions are: "What criteria should be used to select students to receive Chapter 1 services?" and "What kinds of Chapter 1 services should be provided to meet the needs of individual children?"

The purpose of this paper is to attempt to answer these questions using recent theory and research on individual differences, learning, and instruction. More specifically, in considering these questions I will take the perspective of an aptitude-treatment interaction approach (ATI). I begin by providing a brief overview of this approach.

The Aptitude-Treatment Interaction Approach

The aptitude-treatment interaction (ATI) approach assumes that students differ in educationally important ways. These differences or "aptitudes" have been defined as "any characteristic of a person that forecasts his probability of success under a given treatment" (Cronbach & Snow, 1977, p. 6). The ATI approach suggests that students who differ in aptitude also differ in the instructional approach that is most effective for them. Thus, a student low on prior achievement may do well in one instructional approach, while a student high in prior achievement may benefit from an alternative instructional approach.

Since Cronbach's (1957) initial conceptualization of the ATI model, much aptitude-treatment interaction research has been conducted. This research has been reviewed by Bracht (1970), Berliner and Cahen (1973), Cronbach (1975), Snow (1976), and Tobias (1981), with by far the most comprehensive review being done by Cronbach and Snow (1977) and updated by Corno and Snow (1986). One recurring theme in these reviews of ATI research is the difficulty of replicating ATI findings across studies, and the small number of consistent ATI findings that have been obtained. However, based on the Cronbach and Snow review, Snow (1976) identified a replicable pattern of ATI findings for students who varied in general ability. He stated that students who were low in general ability did poorly and students who were high in general ability did well in treatments or teaching methods that had the following characteristics: (a) placed burdens of information processing on learners; (b) used elaborate or unusual explanations; (c) involved a "new" curriculum; (d) included discovery or inquiry methods; (e) encouraged learner self-direction; (f) were relatively unstructured or permissive; (g) relied heavily on words rather than pictures or other media; and (h) were rapidly paced. In contrast, students low on general ability did well in treatments or instruction that had the following characteristics: (a) relieved the learners of information processing demands; (b) simplified or broke down the task to be performed; (c) provided redundant text information; (d) substituted other media such as pictures for words; and (e) used simplified demonstrations, models, or simulations. Tobias (1981) reached similar conclusions for aptitude-treatment interaction studies in which the aptitude was prior achievement of the student. After a decade of further research, Snow (in press) has suggested that the above pattern of ATI findings still holds true for students low in ability or prior achievement compared to students high in ability or achievement. We will return to these findings later in our discussion.

Unfortunately, research on aptitude-treatment interactions has been conducted as a separate and distinct tradition from research on teaching effectiveness and school effectiveness. With the exception of myself, few researchers on teaching have taken an aptitude-treatment interaction approach to identifying effective teaching practices. Similarly, with the exception of

Frederiksen (1980), school effectiveness researchers have not examined systematically the extent to which schools may be differentially effective for individual students or groups of students within a school. (See, for example, Peterson et al., 1985). However, in considering services to be provided for Chapter 1 students, I will draw on research findings from the teaching effectiveness and school effectiveness literature where appropriate. In particular, research on classrooms and schools suggests the need to attend to the "unit of analysis" in thinking about the effects of educational services.

In 1975, Cronbach presented an argument that educational researchers need to examine aptitude-treatment interaction effects at several levels, including the level of the individual student and the classroom. He showed that aptitude-treatment interaction effects of an instructional approach at the level of the individual student may not be the same as those at the level of the classroom. For example, a class with a high average level of ability might benefit from instructional approach A while a class with low average ability might benefit from instructional approach B. On the other hand, an individual high-ability student within that class might benefit from instructional approach B while a lower-ability student within that class might benefit from instructional approach A.

These contrasting ATI effects at different levels are exactly what we found in a recent ATI study of teaching in which we examined ATI at the level of the individual student and the level of the classroom. We discuss these findings later in the paper. These findings illustrate the importance of investigating the effects of student aptitudes and possible interactions with instructional treatments at several levels, including the individual student, the classroom, and the school. As we shall see later, some research findings suggest that the effects of compensatory education services interact with the mean level of aptitude of students in the school. For example, a school with a higher mean average level of prior achievement tends to benefit from Title I services more than a school with a lower mean average achievement.

In recent years, the aptitude-treatment interaction approach has spawned a new approach to individual differences: the aptitude process approach (see, for example, Snow, 1980; Snow, in press). The purpose of the aptitude process approach is to describe aptitudes or individual differences between students in terms of the cognitive processes that comprise these aptitudes. Proponents of this approach such as Federico (1980) have argued that:

> Instead of normatively based, psychometric measures of abilities and aptitudes with their static trait-like properties, what is needed are individually based, idiosyncratic indices of cognitive processes with their dynamic, state-like properties. With them, instruction can be optimized by describing treatments to support mediational activity or to modify detrimental, interfering mediation activity. (p. 11)

An obvious implication is that by identifying the cognitive processes and strategies that underlie the performance of a high-ability student, one then has the information necessary to intervene on these processes and to modify and improve the performance and ability of low-ability students. Thus, individual differences such as ability would no longer be static trait-like properties but rather would become dynamic, state-like properties that could be changed through education.

In sum, the aptitude-treatment interaction approach provides a lens through which one can examine the compensatory education literature with an eye toward possible ATI effects. I turn now to a brief analysis of the compensatory education literature and a summary of conclusions that I have reached from my review of this literature.

Evaluations of Compensatory Education Programs

Numerous evaluations have been conducted of compensatory education programs. For example, Romberg (1986) indicated that a computerized search yielded 221 separate reports of evaluations of compensatory education mathematics programs. Moreover, numerous reviews have been done of this research. Thus, rather than exhaustively review these findings, I will cite several representative findings from the Sustaining Effects Study (SES), one of the largest and most comprehensive evaluations of compensatory education (CE) that has been conducted.

Findings from Compensatory Education Evaluations

Four of the major conclusions from the Sustaining Effects Study are as follows:

> 1. Compensatory education (CE) had positive effects on achievement growth and reading, primarily in the lower three grades, and in math in all grades. The ways in which these observed effects come about, however, are not clear, and the beneficial effects, while detectable are not large.

> 2. Some evidence shows continuing CE effects over consecutive years. On the other hand, other evidence indicates that the beneficial effects of CE may be diminished or may not be continued for students who repeatedly receive CE.
>
> 3. The analysis of the structural-relation models shows that CE students tend to receive more special instruction (by special teaching staff or in small groups) but less regular instruction (by classroom teachers in medium or large groups) in comparison with non-CE students who were judged as needing CE.
>
> 4. The amount of regular instruction and tutor-independent work shows some positive but modest, effects on achievement growth. In contrast, the amount of special instruction does not often contribute to the explanation of achievement growth. (Kenoyer, Cooper, Saxton, & Hoepfer, 1981, pp. xxi-xxii)

In addition to the above findings which appear to replicate previous evaluations of compensatory education, authors of the SES study reported three other provocative findings which seem to suggest the existence of aptitude-treatment interactions at the school level where the "aptitude" was the average prior achievement level of students in that school.

> 1. For both reading and math, a high concentration of CE students within a school is a favorable condition for improving achievement growth, especially in the lower two grades. On the other hand, a school's concentration of low achievers often proves to be unfavorable to achievement growth. Unfortunately, the two conditions tend to exist in the same schools. (Kenoyer et al., 1981, p. xxii)
>
> 2. Opportunity to learn is considered in terms of the amount of time available for learning, the amount of on-task behavior, and the overlap between curriculum content and test content. The relationship between opportunity to learn and achievement is quite high for reading and math in the second grade for the poorer schools but not

for the higher-achieving schools. (Carter, 1984, p. 9)

3. Principal's instructional leadership should influence opportunity to learn, but a negative relationship was found between principal's instructional leadership and student achievement. (Carter, 1984, p. 9)

From my reading of the Sustaining Effects Study as well as other evaluations that have been conducted of compensatory education, I have drawn six additional conclusions. These are:

1. Although prior achievement of the student is a major variable used in selecting the student for Chapter 1 services, prior achievement is not always the criterion used for selection.

For example, Cooley (1981), reported that about half the students receiving Title I services are low achievers, and half of the students are not. Further, while 40 percent of Chapter 1 participants are considered poor, 60 percent are not poor. Finally, he found that more children participated in Chapter 1 who were neither low achievers nor from low-income families (5.2 percent) than children who were both low achievers and from low-income families (3.5 percent). Interestingly, he also showed that there were more low-income, low achievers not in the program (5.1 percent) than there were in the program (3.5 percent). Similarly, in summarizing the results of the Sustaining Effects Study, Carter (1984) reported that among low-achieving students who were defined as one or more years below grade level, 46 percent received compensatory education services, and 54 percent did not. Of those regularly achieving students, 19 percent received compensatory education. Of those students who were both low-income and low achievers, 40 percent received compensatory education, and 60 percent did not.

Thus, if one were to regard prior achievement as the most educationally relevant criterion for selecting students for additional educational services, then one would conclude that in many cases the most "needy" students are not being selected for Chapter 1 services. Apparently, a wide variety of students are being selected using several different criteria, and these students differ in their level of prior achievement as well as in other aptitudes.

2. The predominant method of providing Chapter 1 services to students is to "pull out" Chapter 1 students from the regular classroom.

The Chapter 1 students then meet in groups of five to ten students with the Chapter 1 teacher three to five days per week for an average of 30 minutes each day.

In an analysis of compensatory education services, Glass and Smith (1977) reported that approximately 75 percent of compensatory education students received remedial reading instruction using the "pullout" method while 45 percent of Chapter 1 students received mathematics instruction using the pullout approach. They argued further that when one considers that pupils might be pulled out for one subject and not for another, "it is plausible to say that in classes not 100 percent 'Title I eligible' _the practice of 'pull-out' for compensatory teaching is nearly universal_" (Glass & Smith, 1977, p. 2).

3. _Evaluations of Chapter 1 programs suggest that students receiving Chapter 1 services tend to show some achievement gains although the achievement gains are modest, and the effects are usually not sustained_.

4. _Pullout programs for delivering Chapter 1 services do not seem to have positive effects on student achievement_.

In 1977, Glass and Smith reviewed the research and concluded that:

> Research does _not_ support the wisdom of instruction under conditions like those that prevail in "pull-out" programs. Pupils pulled out of regular classrooms would have to receive remarkably effective compensatory programs to offset the potential risks incurred. (p. 5)

Glass and Smith's conclusions are supported by the above findings from the Sustaining Effects Study. These results showed that Chapter 1 students spent substantially more time in special instruction (pullout) than in regular instruction than non-Chapter 1 students. However, time spent in special instruction was not positively related to achievement growth.

5. _Time spent in Chapter 1 instruction has not always been found to be consistently related to the achievement of Chapter 1 students_.

For example, McLaughlin (1977) analyzed nine studies of compensatory education and reported that in seven of the nine studies, more time was found to have positive effects. On the other hand, in an analysis of data for 113 Title I reading projects in Hawaii which she obtained from the Title I Evaluation and Reporting System (TIERS), Wood (1984) found no relationship between hours of reading instruction per week and reading achievement gains. The results from the Sustaining Effects Study suggest that the effects of time may depend on the grade level of the student as well as the average achievement level of the school. Carter (1984) reported that although the relationship between opportunity to learn was high for fifth-grade students in both reading and mathematics, the relationship between opportunity to learn and achievement in reading and mathematics for second-grade students was high only in lower-achieving schools but not in higher-achieving schools.

6. Existing data on compensatory education programs do not permit a systematic analysis of the effects of compensatory education on student achievement from an ATI perspective.

The existing compensatory education data do not lend themselves to an ATI-type analysis for several reasons. First, the "treatment" administered in Chapter 1 programs is not systematically defined or uniform across school districts. Although the pullout method appears to be the predominant method, some schools or school districts may use pullout to varying degrees and provide instructional services other than pullout such as additional teacher aides. Thus, Chapter 1 instructional services cannot be defined and analyzed as a single unitary treatment. A second problem is that the appropriate student "aptitude" has not been systematically defined and used as the criterion for selection of students to receive Chapter 1 services. From an aptitude-treatment interaction perspective, Cronbach and Snow (1977) have argued that a variable such as student's socioeconomic status or parental income serves only as a proxy for more psychologically meaningful variables such as student ability or prior achievement. Thus, they would argue that student's prior achievement or ability is more psychologically and educationally meaningful and should be the aptitude that serves as the criterion for selection to alternative treatments.

In spite of the lack of systematic compensatory education data for ATI analyses, ATI theory and research can be used to help explain some of the above findings for compensatory education and to suggest ways to improve the procedures for selection of students and delivery of instructional services to Chapter 1 students. In the section that follows, I discuss possible problems with the current instructional services being provided by Chapter 1 funds. In particular, I focus on the predominance of the pullout method as the primary means for providing Chapter 1 services. Then I consider problems with the selection and classification of Chapter 1 students for receipt of Chapter 1 services. Finally, my analysis of the problems with the current services and selection and classification of students implies ways in which these processes might be improved. I conclude with some suggestions for ways to improve the selection of Chapter 1 students and the delivery of Chapter 1 services.

Problems with the Current Services Provided to Chapter 1 Students

As described above, most Chapter 1 students receive Chapter 1 services through a pullout method. Thus, compared to their peers, they receive more of their instruction in reading and mathematics from a Chapter 1 teacher in a small-group setting separate from their regular classroom. Glass and Smith (1977) discussed problems with the pullout technique and suggested that this technique may be ineffective both because it labels students and results in consequent changes in teacher's expectations for those students and also because it prevents students from engaging in potentially beneficial tutoring relationships and friendships with students of other ability levels and ethnic groups. They argued, for example, that research on both mainstreaming the handicapped and on racial desegregation suggests that providing special programs for selected children is less effective than integrating these children into the regular instructional program.

In my discussion I will consider five issues related to the delivery of instructional services in Chapter 1 programs. These are: (a) fragmentation vs. integration of what is to be learned; (b) time as a variable; (c) the provision of "direct instruction"; (d) compensatory education for "aptitude processes"; and (e) instructional grouping decisions.

Fragmentation vs. Integration of What Is To Be Learned

An obvious major problem with the current widespread use of pullout techniques to teach reading and mathematics is the probable lack of relationship between what is taught in reading and mathematics by the regular classroom teacher and the Chapter 1 teacher. Indeed, Chapter 1 students may see no relationship between the tasks that they pursue in their regular classrooms and the tasks that they complete for the Chapter 1 teacher in the Chapter 1 classroom. For the Chapter 1 student, the problem is to understand and integrate the meaning of the learning task across situations but also to integrate skills—both higher- and lower-order skills—learned in reading and mathematics in the two situations.

Smith (1984) pointed out that Chapter 1 regulations may serve to fragment instruction for the Chapter 1 student rather than to improve it. As Smith stated:

> The most obvious fragmenting influences are the stresses on regular and Chapter 1 teachers to keep their activities separate, the practice of pulling out Chapter 1 students from regular academic classes to give them compensatory instruction, and the requirements for including students in Chapter 1 which result in some students being included in compensatory programs in year one, not included in year two and re-included in year three. (p. 23)

Research that we discuss below suggests that although such fragmentation of compensatory instruction may pose problems for any student, it would be particularly devastating for low-achieving students. Findings from aptitude-treatment interaction research indicate that such fragmentation of instruction would be particularly debilitating for low-achieving or lower-ability students because these students actually require more help and aid in terms of instructional support, integration, and structure to help them learn than do higher-ability students. (See, for example, Snow, 1976; Cronbach & Snow, 1977; Corno & Snow, 1986; Snow, in press.)

Fragmentation of content across academic tasks. One way of thinking about fragmentation that occurs in Chapter 1 services is to consider that the Chapter 1 student may experience one kind of academic task in reading in the pullout situation and another kind of academic task in reading in the regular classroom. As Doyle (1983, in press) has defined academic tasks, an academic task has the following general components:

1. A product, such as numbers and blanks on a worksheet, answers to a set of test questions, oral responses in class, or a solution to a work problem;

2. operations to produce the product, for example, copying numbers off a list, remembering answers from previous lessons, applying a rule (such as "invert and multiple") to select appropriate answers, or formulating an original algorithm to solve a problem;

> 3. resources, such as notes from lectures, textbook information, conversations with other students, or models of solutions supplied by the teacher;
>
> 4. the significance or "weight" of a task in the accountability systems of a class; for example, a warm-up exercise in math might count as a daily grade or a unit test might equal a 30 percent of a grade for a term. (pp. 2-3)

Using Doyle's conception of task, one might hypothesize that a Chapter 1 student is placed in a more difficult learning situation than a regular student because he or she would have to come to understand the meaning of a task both in the Chapter 1 classroom and in the regular classroom. The Chapter 1 teacher might use tasks that require different products, operations to produce the product, and resources from the tasks required by the classroom teacher in reading. Moreover, the significance or weight attached to a reading task in the Chapter 1 classroom might vary considerably from the weight given to the same reading task by the classroom teacher. Research by Doyle and others suggests that in order to learn effectively in a given classroom situation, the first problem for the student is to understand the academic tasks that are posed by the teacher. Further, academic tasks influence students' thinking about content. These tasks can substantially affect how students come to understand the domain of curriculum content.

Most elementary students are not able to infer the content-related skills and concepts that they are supposed to be learning from the academic tasks that they are given in reading and mathematics by their teachers (Anderson, 1981; Blumenfeld, Pintrich, Meece & Wessels, 1982). When elementary students are interviewed about the purpose for doing academic tasks such as seatwork in reading and mathematics, they do not focus on the meaning of the content to be learned. Rather, they report that their goal is to get the task finished or completed (Anderson, 1981). Anderson (1981) suggested that the student's focus on getting the task finished rather than on the quality or content of the task may be particularly typical of the low-achieving student. Low-achieving students may develop and use strategies that contribute to content coverage, but they do not necessarily develop strategies that contribute to content mastery, nor do they develop cognitive strategies or learning-to-learn skills such as comprehension monitoring. Thus, fragmentation of academic tasks may decrease the likelihood that the low-achieving student will be able to integrate the learning of lower-order skills and higher-order skills in reading and mathematics.

Integration of lower-order skills and higher-order skills in reading and mathematics. Current Chapter 1 services may result in Chapter 1 students receiving more instruction on factual and lower-level skills and less instruction in higher-order skills than non-Chapter 1 students. For example, in the pullout program, the Chapter 1 teacher may focus more on drill and practice of basic facts and algorithms in mathematics than on learning higher-order problem-solving skills. Alternatively, Chapter 1 services may teach some lower-order and higher-order skills but the fragmentation of instruction between the pullout program and the regular classroom may make it difficult for the student to integrate the learning of lower-order and higher-order skills across learning situations. Compared to their higher-achieving peers, the lower-achieving students would have even more difficulty in learning high-order skills in such a situation.

One implication of recent cognitive science research in mathematics and reading is that instruction should emphasize meaning and understanding in the beginning elementary school grades as much as in the older elementary school years. Cognitive science researchers have argued, for example, that to engender meaning and understanding of mathematics and to encourage the development of higher-order thinking in students, teachers should introduce mathematics word problems from the very beginning of mathematics instruction, and word problems should not only be integrated into the mathematics curriculum but should form the basis of it (see, for example, Carpenter, Hiebert & Moser, 1981). Currently, this is not being done in classroom instruction in mathematics and is probably being done even less in compensatory education instruction. For example, the traditional mathematics curriculum has been based on the assumption that computational skills must be learned before children are taught to solve even simple word problems (Carpenter, Fennema & Peterson, 1984). Children are not given word problems to solve until they are deemed to have mastered the necessary computational skills. Then the word problems are usually provided at the end of a mathematical unit, emphasizing the computational skills taught in the unit.

A similar argument for engendering meaning and understanding might be made for children learning to read. Reading comprehension is a case in point. Observational studies of classroom processes in reading have shown that elementary students are not getting much instruction in reading comprehension (Durkin, 1978-1979; Mason & Osborn, 1982). Moreover, when teachers teach low-ability reading groups compared to high-ability reading groups, they give even less emphasis to meaning and more emphasis to accurate reading (Hiebert, 1983). In teaching small groups of Chapter 1 students in the pullout situation, the Chapter 1 teacher might also be giving less emphasis to meaning and more emphasis to accurate reading in her instruction. Interestingly, in a series of recent experiments in which teachers varied their classroom reading instruction to small reading groups so that it differed in emphasis on accurate oral reading vs. emphasis on meaning, Anderson, Mason and Shirey (1984) found that a meaning emphasis produced better student recall of sentences from the lesson than did an accurate oral reading emphasis.

Anderson et al. (1984) indicated that one reason that teachers have not been found to focus on comprehension in classroom instruction particularly with low-ability readers is the assumption that once children have learned to decode, they will learn to comprehend. This assumption is not supported by recent research findings (Becker & Gersten, 1982). Indeed, the Commission on Reading concluded based on recent research data that:

> From the very beginning children should be given all of the elements necessary for constructing meaning. This is important because reading at this early level is a new enterprise, and children must be made aware that reading is always directed toward meaning. (Anderson, Heibert, Scott & Wilkinson, 1985, p. 44)

Thus, effective instruction in reading and mathematics for both low-achieving and high-achieving students should emphasize higher-order skills as well as lower-order skills and should teach these skills in an integrated way. Calfee (1986) and Romberg (1986) have made similar arguments for the teaching of reading and mathematics respectively in compensatory education. Compensatory education instruction must spend adequate time and give adequate content coverage to higher-order as well as lower-order skills. This leads us to consider the second important variable in analyzing Chapter 1 services: instructional time.

Time as a Variable

Reviewers of teaching effectiveness research have pointed out the importance of instructional time and content coverage as variables that are significantly related to students' achievement on standardized tests (see, for example, Rosenshine, 1979). The original findings on time and content coverage came from the Beginning Teacher Evaluation Study (BTES) which showed that the amount of time that elementary teachers allocated to reading and mathematics and to particular topics within reading and mathematics varied considerably from school to school and from classroom to classroom (Berliner, 1979). Moreover, subsequent analyses indicated that students had higher reading and mathematics achievement in classes in which more time was allocated to these subjects (Borg, 1980).

Although time allocated to reading and mathematics was shown to be related to student achievement, an even stronger relationship was found between student engagement in reading and mathematics and student achievement (Borg, 1980). Student engagement was defined as the amount of time or the percentage of time that a student appeared to be attending to, thinking about, or actively working on academic tasks, as judged by classroom observers.

Since the BTES study was completed in the mid-1970s, much attention has been devoted to research on instructional time. (See Fisher & Berliner, 1985, for reviews, analyses, and critiques of this research.) Many reviewers have concluded that there is a significant positive relationship between instructional time and student achievement (Rosenshine, 1979; Stuck, 1980; Caldwell, Huitt, & Graeber, 1982; Wyne & Stuck, 1982; Good & Hinkel, 1983; Leinhardt, 1985; Fisher & Berliner, 1985) while others have been more skeptical and critical (Kepler, 1980; Griffin, Webb, & Confrey, 1981; Karweit, 1983; Levin, 1984; Jackson, 1985; Phillips, 1985; Scriven, 1985). Moreover, the above findings for Chapter 1 programs suggest an inconsistent relationship between time or opportunity to learn and achievement of Chapter 1 students.

Quality vs. quantity of time. The absolute amount of time allocated to reading and mathematics or the absolute amount of time that a student is engaged in learning reading and mathematics is not nearly as important as what is done with that time. For example, Leinhardt, Bickel, and Pallay (1982) argued that for compensatory education, an increase in time spent on criterion-relevant material has direct and powerful effects. On the other hand, they indicated that it is important to emphasize that time spent with a teacher on material that is not criterion-relevant does not have payoff for the criterion. Thus, one must examine how time is spent in compensatory education. Further, consideration must be given to the quality of time. Increasing the number of minutes that a student spends in compensatory education may not lead to higher student achievement by those students without considering how students will spend that additional time in compensatory education. Examination of the quality of time spent in reading and mathematics requires attention to such variables as the type and kind of mathematics task in which the student is engaged, the cognitive level of the reading and mathematics task, as well as attention to individual differences in students, and a focus on the actual learning processes of the students rather than just on students' apparent engagement or attention.

Most examinations of the relationship between time and learning have used quantitative measures of student engagement that have been based on observers' judgments of apparent student attention. However, research has shown that students as early as second grade are able to fake attention (Brophy & Evertson, 1976). In our research we have found that students' own reports of their attention, understanding, and of their cognitive processes during instruction—the kinds of things that students report actually thinking about and the kinds of information they are processing—are better predictors of student achievement than observers' judgments of students' apparent attention (Peterson, Swing, Braverman, & Buss, 1982; Peterson & Swing, 1982; Peterson, Swing, Stark, & Waas, 1984; Peterson, 1985). When compared to lower-ability (lower-achieving) elementary students, higher-ability (higher-achieving) elementary students were more likely to report engaging in the following cognitive processes during classroom mathematics instruction: (a) attending to the lesson; (b) understanding the lesson; (c) either employing a variety of specific cognitive strategies or engaging in these cognitive strategies more frequently; (d) engaging in strategies that involved problem-solving steps or showed insights into the mathematics; and (e) using the specific strategy of relating the new information to be learned to prior knowledge. We concluded that these are cognitive processes or classroom "aptitude processes" that define ability and produce student achievement.

Altering the "quality" vs. the quantity of student engagement. In a recent study, we trained teachers to teach students to engage in effective "aptitude processes" or cognitive strategies during mathematics instruction (Peterson, Swing, & Stoiber, 1986). We wanted to test experimentally the hypothesis that the amount of time that the student spends engaged in learning per se might not be nearly as important to the student's achievement as the actual cognitive strategies and processes that a student engages in while spending time in learning. To do this we compared the effects of two alternative interventions on fourth-grade students' mathematics achievement.

Teachers (n = 30) were assigned randomly to one of the following two interventions: (1) training in "academic learning time" and how to increase students' engaged time in mathematics; or (2) training to promote students' use of four cognitive strategies (thinking skills) in learning mathematics: (a) defining and describing; (b) comparing; (c) thinking of reasons; and (d) summarizing. During December, students in all teachers' classes completed a mathematics achievement test which measured both lower-level thinking and higher-level thinking in mathematics. During January, we observed teachers to obtain a pre-intervention measure of their classroom behavior. In February teachers received their respective training through workshop sessions, feedback sessions, and printed materials. We observed each teacher for eight days during March, April and May to obtain a measure of post-treatment teacher behavior and classroom processes. In May, we also interviewed students about the thought processes and cognitive strategies that students engaged in during a selected mathematics lesson. In late May students completed the same mathematics test that they had completed in December. We will present some of the results of the study and return to the study later in the paper.

Our observation data indicated that teacher and student behavior were altered significantly by the thinking skill and time interventions. As intended, teachers taught thinking skills more after our intervention than before. Although teacher use of time generally was not affected by the time intervention, student engagement in time classes increased more during the post intervention phase than did student engagement in thinking skill classes. These increases in student engagement, however, did not result in significantly greater increases in mathematics achievement in time classes than in thinking skills classes.

Compensatory effects of cognitive strategy training. Our results showed that the treatment effects depended not only on the type of intervention but also on the prior achievement level (ability level) of the student. Regression analyses of posttest achievement on pretest scores showed significant ability-by-treatment interactions at the level of the individual student. Ability was measured by prior achievement on the mathematics achievement test. Within mathematics classes, higher-ability students benefited more from the learning time intervention than the thinking skills intervention, while lower-ability students within the class benefited more from the thinking skills intervention than the learning time intervention. These significant ability-by-treatment interaction effects appeared for high level mathematics achievement, conceptual thinking, and word problem achievement. We found no significant main effects or ability-by-treatment interaction effects on lower-level mathematics achievement or computational achievement as measured by the mathematics achievement test.

From our findings we concluded that lower-ability (lower-achieving) students within a class were helped by the thinking skills treatment more than higher-ability (higher-achieving) students because the thinking skill treatment "compensated" for aptitude processes or cognitive strategies that lower-ability students do not naturally have. The thinking skills intervention provided the lower-ability students with strategies and processes that they might use in solving mathematics problems and learning mathematics. Acquisition of these strategies then permitted them to learn as effectively as the higher-ability students within the class who had already developed strategies on their own. Our conclusions were substantiated further by our findings from the verbal protocol reports of students' mathematics thinking. We return to a discussion of these verbal protocol findings later in the paper.

Effects of time on higher-order learning. Our results suggest that the quantity of time students spend engaged in learning might not be nearly important as the quality of that time or the actual cognitive processes in which students engage. Another possible implication is that the effects of increasing instructional time and student engagement may differ for lower-order achievement compared to higher-order achievement. For example, in our study we found significant ability-by-treatment interaction effects only on the higher-order, conceptual, and word problem items of the mathematics achievement test and not on the computational and lower-order items.

Interestingly, Anderson, Mason and Shirey (1984) also found a significant interaction effect between instructional time and the type of educational achievement being emphasized (lower-order vs. higher-order thinking in reading). They developed a partial causal model of the relationship between students' reading ability, instructional time, and lesson mastery in different reading groups. They found that lessons with an accurate reading emphasis depended heavily on instructional time for their effectiveness. These lessons obviously were emphasizing lower-level skills in reading. In contrast, instructional time made little difference in meaning emphasis. Here it was the quality of the child's encounter with the lesson material that was important, not the quantity. Thus, the effects of instructional time and student engagement may depend not only on the prior achievement level of the student, as our data suggest, but also on the dependent variable of interest--lower- level achievement or higher-level achievement in reading and mathematics.

For lower-ability (lower-achieving) students, increasing their levels of engagement may be a necessary but insufficient condition for improving their higher-level and conceptual thinking in mathematics. For these students, what might be needed is instruction that ensures not only that they are engaged, but also that they are engaged in effective cognitive processes and strategies that will lead to improving their achievement of higher-level skills in mathematics.

Direct Instruction

Teaching effectiveness researchers have used the findings from research on instructional time to argue that the most effective approach for increasing student achievement is direct instruction, primarily because direct instruction promotes student on-task behavior and engagement in the academic task. In a recent review of teaching effectiveness research, Brophy and Good (1986) concluded that the research shows that "students learn more efficiently when their teacher first structures new information for them and helps them relate it to what they already know, then monitors their performance and provides corrective feedback during recitation, drill, practice, or application activities." Although Brophy and Good did not use the term here, this analysis fits the description of teaching often called direct instruction (Rosenshine, 1976, 1979; Good, 1979).

Findings from aptitude-treatment interaction research suggest that the elements of direct instruction identified by Brophy and Good might be particularly effective for increasing the achievement of lower-ability (lower-achieving) students (Snow, 1976, in press; Cronbach & Snow, 1977; Corno & Snow, 1986). As described above, Snow concluded that lower-ability students require more external structure and instructional support to learn than do their higher-ability peers.

Direct instruction: effective for what and for whom? In spite of the above evidence in support of the effectiveness of direct instruction, particularly for enhancing the achievement of lower-achieving students, one might raise several major questions about direct instruction. One major question articulated by Leinhardt, Bickel, and Pallay (1982) is: "Direct instruction in what?" They argued that:

> If students need to learn to read orally or silently, they must spend time reading rather than discussing reading (language experience); however, if students are to be tested in discussion or essay writing, they must spend time doing those things. Direct instruction in criterion-relevant material is in competition with more humanistic and indirect approaches to learning... direct instruction does interfere with the simultaneous use of other valued approaches. (p. 409)

Similarly, Peterson (1979a, 1979b) suggested that the question that should be asked of direct instruction is "Effective for what and for whom?" Teaching effectiveness research to date has shown that direct instruction is the most effective method for promoting student achievement on standardized tests in reading and mathematics. However, these tests assess primarily lower-level skills in reading and mathematics. Direct instruction may not be the most effective method for promoting students' achievement of higher-level cognitive skills in reading and mathematics.

Direct instruction and higher-order learning. Direct instruction may be necessary but insufficient for student achievement of higher-level skills. Higher-order thinking in reading and mathematics may require a less directive instructional approach that transfers some of the burden for teaching and learning from the teacher to the student and promotes greater student autonomy and independence in the teaching-learning process. Some tentative support for this hypothesis was provided by a meta-analysis that I conducted on studies of open and traditional teaching approaches (Peterson, 1979a). I found that although the effect sizes were small, they suggested that with the more direct approaches of traditional teaching, students tended to perform slightly better on achievement tests, but they did worse on tests of more abstract thinking, such as creativity and problem solving. Conversely with less direct, more open approaches while students performed slightly worse on achievement tests, they tended to do better on creativity and problem solving. Similarly, in a recent observational study in fourth-grade mathematics classrooms, Peterson and Fennema (1985) found that certain types of classroom activities were significantly related to low-level mathematics achievement while others were related to high-level mathematics achievement.

Other researchers have also suggested the need to define more precisely the effects of direct instruction (Smith, 1984; Doyle, 1983). For example, Doyle (1983) concluded that direct instruction focused on acquisition of knowledge and specific skills is probably more appropriate than indirect methods for teaching low-ability students and students in the elementary grades. On the other hand, he argued that direct instruction would be likely to have few long-term consequences unless it was combined with instruction, either direct or indirect, "on higher-level executive processes and knowledge structures for representing tasks and selecting solutions strategies." For example, instruction and decoding would need to be combined with instruction and comprehension monitoring to foster a student's ability to read independently. Moreover, he argued that a certain degree of "unstructuredness" may be necessary even in direct instruction for teachers to determine whether students really understand how and when to use their knowledge and skills. In some cases it may be necessary to allow students to experience the content so that they can invent procedures and construct knowledge structures on their own.

What is and should be the effective use of direct instruction to provide Chapter 1 services? Findings from research on teaching and aptitude-treatment interaction research indicate that "direct instruction" in lower-level knowledge and skills should be particularly effective for enhancing the lower-level achievement in reading and mathematics of lower-ability (lower-achieving) students. An obvious question is "To what extent is 'direct instruction' being implemented effectively in the teaching of Chapter 1 students in both Chapter 1 classrooms and in regular classrooms?" To answer this question, researchers on compensatory education would need to collect systematic observation data on the specific teacher behaviors and variables defined by Brophy and Good as components of direct instruction. Unfortunately, these type of observational data have not been collected in recent studies of Chapter 1 services and their effects. Carter (1984) conducted the most sophisticated analyses of instructional processes in compensatory education programs. He did consider the amount of time available for learning, the amount of on-task behavior, and the overlap between curriculum content and test content. However, for his data on instructional processes and teaching methods, he appeared to rely primarily on survey information reported by each teacher (see Hemenway et al., 1978).

Even if data indicated that compensatory education programs were currently implementing direct instruction effectively in their pullout programs, the question remains as to whether direct instruction would be particularly effective for teaching higher-level skills. The need for educational services to focus on enhancing students' higher-order achievement in reading and mathematics has been documented by the recent results of the National Assessment of Educational Progress (NAEP). Results of the NAEP in mathematics showed that the majority of students at all ages have difficulty solving nonroutine problems (Carpenter, Corbitt, Kepner, Lindquist, & Rays, 1981). Most students have not learned problem-solving skills in mathematics. For example, on the NAEP mathematics exam 13-year-olds were given the following classic "van" problem:

> An army bus holds 36 soldiers. If 1,128 soldiers are being bused to their training site, how many buses are needed?

Fewer than one-third of the students who selected and carried out the appropriate algorithm produced the right answer to the question which required a focus on the meaning of the problem statement. Eighteen percent of the students said that the number of buses needed is "31", and 29 percent said "31 remainder 12." Only 23 percent gave the correct answer (Schoenfeld, in press).

Similarly, the results from the NAEP in reading indicate that during the 1970s students continued to make slight gains in basic reading skills as measured by their ability to comprehend everyday material (NAEP, 1981). On the other hand, from the early 1960s to the late 1970s, students showed small but steady declines in their scores on tests of advanced reading skills (Chall, 1983).

These data suggest the need for an increased instructional focus on teaching higher-level skills in reading and mathematics to all students. Such an increased focus might be particularly important for lower-achieving students who would have even more difficulty than their peers in learning these higher-order skills on their own. In the next section, we consider a particular type of higher-order skills that might be taught in reading and mathematics: cognitive strategies or "aptitude processes" for learning from classroom instruction.

Compensatory Education for "Aptitude Processes"

As described above, one important outgrowth of aptitude-treatment interaction research is "aptitude process" research which has shown the positive benefits of training students directly in cognitive strategies or cognitive processes that define abilities (see, for example, Snow, 1982). One important outcome of these attempts to directly train "aptitude processes" is the finding that training in generalizable cognitive strategies, rather than discrete cognitive skills may have more long-lasting effects (Corno & Snow, 1986).

At the same time a number of other researchers have conducted studies in which they have trained students to engage in cognitive strategies to enhance learning, memory, or learning from teaching. Researchers have found beneficial effects of training students [illegible] the following kinds of cognitive strategies: memory strategies, elaboration strategies, comprehension monitoring, self-questioning, rehearsal strategies, planning and goal setting, comprehension strategies, verbal self instruction and self regulation, problem solving strategies, hypothesis generation, and study skills. Examples of cognitive strategy research are provided in a recent review by Weinstein and Mayer (1986) and in volumes by O'Neill (1978) and O'Neill and Spielberger (1979) and more recently by Pressley and Levin (1983a, 1983b) and Kirby (1984).

Cognitive strategy research. This recent research on training cognitive strategies has demonstrated that cognitive strategy training can significantly enhance students' learning. More specifically, cognitive strategy training studies have demonstrated that training can enhance the achievement of low-achieving students (see, for example, Brainin, 1985). Unfortunately, most cognitive strategy research has been conducted in laboratory settings with learning outcome measures that are narrowly defined and related directly to the experimental task (Peterson & Swing, 1983). Thus, one might question the generalizability of effects to an actual classroom situation and to students' actual classroom achievement. However, after reviewing this research, we concluded that training in cognitive strategies has potential for improving students' achievement and that attempts at classroom implementation of cognitive strategy training are clearly needed (Peterson & Swing, 1983).

Further support for the need for cognitive strategy training comes from our previous research in which we interviewed elementary students about the cognitive strategies that they employ during classroom mathematics instruction. In these studies, we consistently found that elementary students do not spontaneously use the sophisticated kinds of strategies that have been identified by researchers as effective. (Peterson et al., 1982; Peterson et al., 1984; Peterson, 1985.) Thus, the results from both experimental cognitive research and our own naturalistic classroom research support the need to investigate the effects on student achievement of teaching students to use more sophisticated cognitive strategies in their classroom learning. This led to our recent investigation described above in which we trained teachers to teach students to use thinking skills in their mathematics learning.

Effects of strategy training on the low-achieving student. As described above, we found that within classrooms, lower-ability students benefited from the thinking skills treatment. Specifically, verbal protocol data suggested that the thinking skills treatment had a "compensatory effect" for lower-ability students within a class by providing them with cognitive strategies that they did not have naturally. Use of these thinking skills by both lower-ability and high-ability students thus decreased the effect of mathematics ability on students' achievement within the thinking skills classes. In contrast, in the time classes without such a cognitive intervention to compensate for the lower-ability students' lack of aptitude processes, a strong positive within-class relationship existed between students' prior mathematics achievement and students' posttest mathematics achievement.

To provide a concrete example of how a low-ability student within a time class differed in his reported cognitive processes from a low-ability student within a thinking skills class, we present two verbal protocols—the first one for a student in the time group and the second one for a student in the thinking skills group. The student below was given the following classic "van" problem that he had not seen before and was asked to think aloud as he worked the problem:

> 29 students went on a field trip. Each van could hold 8 students. How many vans are needed?

The following verbal protocol was obtained from a student in the time group:

Student:	You have to multiply 8 x 9 um, um, then you have to multiply 9 and 7. Then you have to multiply um, 8 and 2.
Interviewer:	Tell me everything that you're thinking.

Student:	Um, then you have to multiply 7 and 2. Then you add 2 um, and you add 6 and 3. Then you add 6 and 1.
Interviewer:	Ok, are you done? Yes? What do you think the final answer is?
Student:	14,992.
Interviewer:	Ok, what were you thinking about besides the problem?
Student:	Um, the answer.

To illustrate the use of the thinking skills by a lower-ability student in a thinking skills class, we present an excerpt from the student's retrospective seatwork protocol. The student was given the following problem that had appeared on the student's seatwork earlier:

> Sunset trail is 4 miles longer than Lonesome trail. Lonesome trail is 13 miles long. How long is Sunset trail?

Interviewer:	Tell me everything you were thinking or doing to figure out the problem, so I can learn to think about it just like you.
Student:	Well, I was thinking that if Lonesome trail was 13 miles long, if I added to 13, I would get how long 4 miles was. And if I added a different number with 4, I wouldn't have got the same number as I got to see how long it was. And if I added it this way 13 + 4, and then I added 4 + 3 is 7, and I put the 1 down here and I got 17 miles long.
Interviewer:	What things that you learned in math class either today or some other time were you thinking about or doing?
Student:	Well, when I add my problem I always think what my way is: Should I add this or times it? And I found out that I added it. And when I was done I also found out that my answer was right because there was one part, and I had a whole, and I had a part, and I needed another part, and this was the part to make the whole.

The first segment of the above student's protocol indicates extensive use of thinking of reasons. The second part of the student's verbal protocol demonstrates use of the thinking skill of comparing. Contrasting the verbal protocol of this lower-ability thinking skills student with the above lower-ability time student, one finds greater use of cognitive strategies as well as a more thoughtful approach to the problem that was being solved. For example, the time student came up with an answer that was absurd given the small numbers in the problem. Thus, these qualitative data provide further evidence of the effectiveness of thinking skills instruction in altering the way that low-achieving students approach, solve, and think about word problems in mathematics.

ATI effects of teaching cognitive strategies. In sum, the results of cognitive strategy research, aptitude processes research, and my own research suggest the potential for teaching low-achieving (low-ability) students the kinds of cognitive strategies and aptitude processes that they are lacking and the positive effects that such training may have on these students' achievement. Although some researchers such as Smith (1984) have suggested the need to do so, most compensatory education services have not attempted to teach directly such cognitive strategies. For example, Smith (1984) offered the specific suggestion that at the secondary school level, compensatory education for low-achieving minority students might focus on teaching cognitive strategies such as studying skills.

Compensatory education instruction should provide a range of cognitive strategies to the student depending on the student's level of achievement as well as on the student's developmental level and age. For example, research has shown that training in mnemonic strategies for improving student's memory are particularly effective for lower elementary students but are not as effective for high school students because these students have already developed such strategies (Peterson & Swing, 1983). Also, more able and/or older students may have developed sophisticated, effective cognitive strategies of their own. For example, in a study by Schoenfeld (1979) in which problem-solving strategies were taught to upper division science and mathematics undergraduates, Schoenfeld noted that the students were often reluctant to use the heuristic strategy that was being taught. This may have been due to students' reliance on problem-solving strategies that they had already developed.

Students need to be trained in means for selecting the appropriate cognitive strategies for learning and for allocating their resources wisely. Intuitively, it seems possible that memory, for example, would be enhanced by (a) "metacognitive" knowledge of one's memory processes, capacity limitations, and repertoire of strategic skills; (b) "control processes" such as monitoring and evaluation of strategy effectiveness; and (c) organization of activities by selecting a task-appropriate skill and adapting strategic activities to changing task demands (Brown, 1978; Butterfield & Belmont, 1977). However, again one must consider both the developmental age of the learner as well as the ability level of the learner.

Research has systematically shown that developmentally young learners possess less of this metacognitive knowledge and exhibit poorer executive control than mature learners (Brown, 1978; Butterfield & Belmont, 1977). If one assumes that control processes and metacognitive knowledge actually do affect effective strategy use, naive learners' deficits in these areas may limit their capacity to benefit from strategy instruction provided by compensatory education services. Thus, this points again to the need to consider both the prior achievement as well as the age of the student if cognitive strategy instruction were to be provided as part of compensatory education services.

In addition to considering the prior achievement level of the individual student, our research findings also suggest the need to consider the average achievement or ability level of the group to whom the instruction is being given. I would like to provide a concrete example of how a regular teacher's classroom instruction and the resulting student achievement in the class might be affected by the average ability level of the class. In our study of learning time and thinking skills described above, we found significant ability-by-treatment interaction effects at the level of the individual student. However, regression analyses of posttest achievement on pretest scores also showed significant classroom-level ability-by-treatment interactions. Higher-ability classes achieved more on the high-level cognitive mathematics items, the conceptual items, and word problems in the thinking skills intervention than in the learning time intervention. In contrast, lower-ability classes achieved more in the learning time intervention than in the thinking skills intervention.

These results suggest that a fairly high level of average mathematics ability for a given class might have been necessary for a teacher to implement the thinking skills treatment effectively with that class. Thinking skill teachers might have used the thinking skill techniques differently in their class or instructed them differently depending on whether the class was a higher-ability class, medium-ability class, or lower-ability class. Alternatively, the teachers might have taken the instructional techniques that we gave them (which included direct instruction in the skill and teaching students to prompt themselves) and applied them directly to teaching their classes regardless of the perceived ability level of the class. If this were the case, then the instructional procedures that the teachers were taught to use with the students may not have been well adapted to lower-ability classes.

Some obvious ways in which we could have suggested that teachers modify their thinking skill instruction to be more appropriate for lower-ability classes would have been to provide more instruction and guided practice for each thinking skill and to distribute skill instruction across a longer time period. Given that lower-ability children have greater difficulty learning not only mathematics facts and content-related skills, but also learning general learning skills as well, then substantial guided practice, extended thinking skill instruction, and extensive instruction over long periods of time might be needed for teachers to effectively teach thinking skills to classes of lower-ability students.

Instructional Grouping Decisions

The type of compensatory education services provided in a school and the way students are selected for these services may have a profound effect on the average ability level and range of ability both within the instructional group in which the compensatory education services are provided, as well as within the typical classroom within the school. For example, a school's decision to have a pullout program in reading in which Chapter 1 students are taken in homogeneous groups of five to a separate classroom to be taught by a Chapter 1 teacher may result in these schools deciding to form classroom groups that are heterogeneous in ability.

This was the case in a particular elementary school in Madison, Wisconsin, which receives substantial funding from Chapter 1 and also contains a substantial number of low-achieving and minority students. The principal of this school reported that because students were pulled out for instruction in reading and mathematics, she made the decision to assign students to their regular classrooms so that each classroom would contain approximately the same number of minority vs. majority students and would contain a wide range on ability. The negative effect of this decision was that the regular teacher within a classroom was then confronted with the task of teaching reading to students who differed significantly in their levels of ability. Teachers often had to form as many as seven reading groups within the regular classroom to teach these students. The principal reported that the regular classroom teachers were having difficulty teaching so many reading groups and were increasingly uncomfortable with the prospect of having to teach so many reading groups. This anecdotal report is substantiated by research on teachers' grouping practices by Hallinan and Sorenson (1983) which suggests that teachers most often form three reading groups within the classroom. Thus, perhaps teachers are most comfortable and can most easily teach approximately three groups.

The effects of mean and range of ability within the group. The above example illustrates that the selection of students for compensatory education services and the services provided may have profound effects on the average ability level of classes, the differences between classes in ability levels, as well as the within-class ability distribution of students. Good and Marshall (1984) pointed out that such differences in average ability level 1 of a class as well as the distribution of ability within the class can have significant effects on instructional practices as well as on the achievement of lower-ability and higher-ability students within the class.

For example, Beckerman and Good (1981) studied the ratio of high- and low-achieving students in classrooms using a sample drawn from a large metropolitan school district that served a middle-class population in neighborhood schools. They defined classrooms with "more favorable" instructional situations as those in which more than a third of the students were high aptitude and less than a third were low aptitude. In contrast, they defined "less favorable" classrooms as those in which less than a third of the students were high aptitude and more than a third were low aptitude. Beckerman and Good found that both low- and high-aptitude students in favorable classrooms had higher achievement scores than the two groups in unfavorable classrooms. For low-aptitude students and for some high-aptitude students being in a classroom with many high-aptitude students was more beneficial than being in a low-aptitude classroom.

Similarly, Veldmann and Sanford (1982) found that both high- and low-ability students did better in high-ability classes, and that the effects of class ability were more pronounced for the low-ability students. They argued that lower-ability students were more likely than high-ability students to conform to the behavior of the majority of their classmates and that low-ability classes could be described as poor learning environments which were frequently disrupted. They concluded that changes in class composition could convert a very effective teacher into a totally ineffective one.

Stodolsky (1984) has argued that the composition of a classroom, which is a decision made at the school level, may establish the student diversity with which a teacher must work toward achieving educational outcomes. For example, Barr and Dreeben (1980) found that the ability distribution within first-grade reading classes was related to the decisions that teachers made about the creation of instructional reading groups. Further, Dreeben (1984) reported that the range of ability and the number of low-ability children in a class related to the configuration of reading groups that was formed by the teachers. He suggested that the teachers' decision-making concerning instructional grouping is influenced substantially by their perceptions of the classroom composition in terms of the range of ability and the number of low-ability students in the class. Thus, the kind of instructional groups formed both by the regular classroom teacher and the Chapter 1 teacher are substantially determined and affected by the decisions made at the school level for use of Chapter 1 funds. Because the issue of instructional grouping in Chapter 1 programs has been addressed by Wilkinson (1986), we will not exhaustively review this literature. However, we will consider some significant issues related to instructional groups in terms of the heterogeneity of ability within the instructional group formed.

Disadvantages of homogeneous ability groups. Current practices in compensatory education, such as the pullout, appear to result in students being taught more often in both teacher-led and student-led groups that are homogeneous rather than heterogeneous in ability. Students are pulled out in a homogeneous ability group to be taught by the Chapter 1 teacher. This leaves a more homogeneous group of students left within the regular classroom to be taught by the teacher.

In their review of whether students learn more in heterogeneous or homogeneous groups, Good and Marshall (1984) concluded that in reading where instructional grouping is most traditionally used, the research shows that high-ability students consistently receive more active instruction and more comprehension instruction concerning the meaning of what they have read. In contrast, in teaching low-ability reading groups, teachers more often emphasize practice and skills. They suggested that in teaching low-ability reading groups, teachers most often err by holding expectations for these students that are too low, by pacing instruction too slowly, and by not emphasizing the substantive aspects of reading tasks. They suggested further that "higher quality and more thoughtful teaching of mixed groups of learners can lead to better outcomes than can fragmented teaching of a number of different groups" (Good & Marshall, 1984, p. 32).

Another consequence of the selection of Chapter 1 students for pullout instruction in homogeneous groups is that these students have less opportunity to learn from their peers, particularly from their higher-achieving peers. Glass and Smith (1977) suggested that the opportunity for peer tutoring would occur less often in the pullout than the mainstream setting and that research on peer tutoring shows large, beneficial effects both for the child who teaches and the child who is taught.

Benefits of heterogeneous ability groups. Although the benefits of cooperative learning in small mixed-ability groups have been well documented (Webb, 1982; Peterson, Wilkinson, & Hallinan, 1985; Wilkinson, 1986), I would like to provide a concrete example of how students benefit by working cooperatively in groups with students of other ability levels. Small-group cooperative learning techniques can be adapted easily to the format of mathematics and reading instruction typically used in elementary school classrooms. In our informal observations of elementary school classrooms we have observed that cooperative learning interactions often occur spontaneously around learning centers which many teachers use in their elementary classrooms.

Our research findings suggest that such small-group cooperative learning interactions would be most productive in groups in which students differ in ability levels and expertise. For example, we have found that the positive effects on mathematics achievement of small-group interactions seem to depend on the task-related interaction that occurs in the small group. What happens is that students learn by explaining an answer or explaining why an answer is incorrect to another student or by helping other students with their work. Students learn by explaining why the answer is incorrect and by helping the student come to see the correct answer. In addition, the receiver of the explanation may benefit from receiving an explanation that describes the kinds of strategies and processes that a student should use to solve the problem (see, for example, Peterson & Janicki, 1979; Peterson, Janicki, & Swing, 1981; and Peterson, Wilkinson, Swing, & Spinelli, 1984).

If one takes the perspective of the student as needing to develop cognitive strategies for problem solving, one might argue that students learn effectively in small cooperative groups because they become actively involved in learning rather than passively receiving information being presented to them by the teacher. The following example of second- and third-grade students working together in a cooperative mathematics group on their seatwork presents such a picture of active learning. In this example, the small-group members were told to check their answers with one another after doing several seatwork problems. Johnny, the high-ability student in the group, is convinced by the lower-ability students in the group that his answer is incorrect:

Katie: (reading the answer from her paper) Dollar sign zero point forty-four.

Johnny: What? Whaddya mean "zero point forty-four"?

Katie: (pointing on Johnny's paper) Zero point forty-four.

Johnny: What? Eight nickels and four pennies equals thirty-six.

Katie: Eight nickels.

Johnny: Eight nickels. Eight times four equals thirty-two. Thirty-two plus four equals thirty-six.

Anne: No, it's forty-four, Johnny.

Katie: Let's go on with it.

Johnny: Which one are we on?

Anne: We're on five.

Katie: Five.

Johnny: (to Anne) Whaddya mean forty-four?

Anne: It's the eight nickels--forty-four.

Johnny: Ah, yeah. Wait a minute. Wait a minute.

Anne: It's forty-five.

Johnny: No, wait, it's not even thirty or forty-four. Naw, God, it's forty-nine.

Katie: Yeah.

Johnny: Forty-nine. No, wait a minute, it's forty-eight?

Anne: It's forty-four.

Johnny: It's forty-eight. Eight times . . .

Katie: Okay. (counting on fingers) 5, 10, 15, 20, 25, 30, 35, 40, 41, 42, 43, 44.

Johnny: No, wait, wait a minute. Okay, okay, eight . .

Anne: (counts on fingers to show Johnny) 5, 10, 15, 20, 25, 30, 35, 40, 1, 2, 3, 4.

Johnny: 5, 10, 15, 20, 25, 30, 35, 40. Okay, 40 + 4 = 44.

In the above example Johnny is convinced, or has to be convinced, that his answer is incorrect. The process that the other students in the group go through, basically through the steps of working the problem, makes their thought processes explicit to Johnny to convince him that his answer is wrong. Also, Johnny himself must think aloud and go through the problem solving steps of his own thought processes before he is convinced that the answer 0.44 is indeed the correct answer. One might hypothesize that not only are students learning the correct mathematics answer from such small-group interaction, but they are also more likely to learn the different strategies for arriving at answers to mathematics problems as well as possible skills and strategies for diagnosing and monitoring their own mathematics learning.

In sum, research suggests that lower-achieving students might benefit both in terms of learning basic skills in reading mathematics and in terms of learning higher-order and metacognitive strategies and skills from interacting with higher-achieving peers. To the extent that the selection and provision of services in Chapter 1 mitigates against such a situation, one can infer that the learning situation of the Chapter 1 student might not be as facilitative or productive as it might otherwise be.

Selection of Students to Receive Chapter 1 Services

As discussed above, the current procedures for selecting students to receive Chapter 1 services result in a diversity of students being selected including some low-achieving students, some high-achieving students, some low-income students, and some higher income students. Given our analysis of the problems of provision of Chapter 1 services to students and our ATI perspective on the problem, we would argue that the most educationally and psychologically relevant criterion for selection of Chapter 1 students is educational achievement. Students should be selected to receive Chapter 1 services who fall below an established cut-off score on educational achievement in reading and mathematics.

To determine the appropriate cut-off scores for selection of students to receive Chapter 1 services at a local level, appropriate data bases need to be developed and then these data need to be analyzed to determine cut-off scores to be used for selection and classification of Chapter 1 students. Methodological procedures and techniques now exist to derive decision rules which might be used by schools and school districts to select Chapter 1 services. For example, Van der Linden (1984a, 1985b), has proposed sophisticated procedures for test-based decision-making which extend and refine those developed originally by Cronbach and Gleser (1965). However, data bases must be developed so that rational decision-making rules can be applied to select students for Chapter 1 services.

Two additional problems associated with selection of students should be noted: (a) the possibility of misclassification; and (b) "labeling" effects of classification as a Chapter 1 student. For example, Reschly (1981, 1984) had discussed the effects of misclassification of students in special education as a result of psychological testing for educational classification and placement and has suggested ways to minimize misclassification and its effects. Although Reschly's analysis pertains to special education, presumably the same problems in misclassification exist in selection of students for Chapter 1 services, and similar caveats apply.

Consequences of "Labeling" Students

One of the unintended consequences of selection of students for Chapter 1 services and one of the negative consequences of misclassification as a Chapter 1 student is the resulting "labeling" that may occur. In their analysis of the possible effects of pullout programs in compensatory education, Glass and Smith (1977) reviewed over 40 experiments and found that the effects of labeling students were "large and worrisome." They concluded that:

> Labeling a pupil "mentally retarded," "intellectually slow," or "academically weak," has virtually no measurable effect on his IQ. However, such labeling does reduce his academic achievement (by one quarter standard deviation below that for comparable pupils not so labeled). Furthermore, teachers' attention and support for pupils invidiously labeled are reduced by one-third standard deviation (below those for comparable unlabeled pupils); and teacher's judgment of labeled pupil's success, motivation, social competence, etc. is reduced by nearly one-half standard deviation. (p. 5)

From my own research on teachers and teaching, I would like to sketch a concrete example of how labeling effects might operate in a typical elementary classroom. In a recent study, we collaborated and combined expertise with thirteen fourth- and fifth-grade teachers to generate hypotheses about teacher-student classroom interaction patterns that might influence children's development of "autonomous learning behaviors" in mathematics. (Fennema and Peterson, 1985). We defined autonomous learning behaviors as those behaviors that enable one to do high cognitive level tasks in mathematics. Such behaviors include working independently on high-level tasks, persisting at such tasks, choosing to do high cognitive level tasks, and achieving success in such tasks. We have argued that autonomous learning behavior is a necessary prerequisite for performance on high cognitive level mathematics achievement tests.

In our work with classroom teachers, we found that teachers were less likely to demand autonomous learning behavior from students whom they perceived as low-achieving or low-ability. Teachers were more likely to give these "low-achieving" or "low-ability" students tasks that were easier and would lead to success than highly demanding or difficult tasks in mathematics. Further, teachers appeared more likely to give substantial praise, encouragement, and support to these students (see Fennema & Peterson, 1984, 1985). Thus, in our discussions with these elementary teachers, we found that most of the teachers seemed to base their classroom interactions with students on a "principle of compensation."

Effects of the Principle of Compensation

Marland (1977) originally identified the "principle of compensation" as one of the five key implicit principles of practice that guide the behavior of elementary teachers. He described the principle of compensation as an attempt on the part of the teacher to discriminate in favor of low-ability and culturally impoverished students. I would like to outline three hypothetical examples of how a classroom teacher's deployment of the principle of compensation with Chapter 1 students might have negative consequences for these students.

First, as our research suggests, classroom teachers may be less likely to encourage and demand autonomous learning behavior from these students. If teachers do not demand and encourage autonomous learning behavior from Chapter 1 students as much as from their peers, then the results might be that Chapter 1 students may be less likely to achieve on high level cognitive tasks in mathematics and reading.

Second, in employing the principle of compensation with Chapter 1 students, teachers might give these students easy tasks on which they can succeed and not give them more difficult tasks. Although some research suggests that student achievement might be enhanced by giving students a high proportion of easy tasks in reading and mathematics (Fisher et al., 1980), other research suggests that students need to experience more difficult tasks in order to be motivated to attempt such tasks and to learn to persist at such tasks (Dweck, 1975).

Finally, the "labeling" of Chapter 1 students may have unintended consequences for these students' educational achievement, by lowering teacher expectations for these students. School effectiveness research has shown that one of the key variables that defines effective schools is high expectations by the staff for student achievement (Purkey & Smith, 1983; Good & Brophy, 1986). Clearly, expectations alone do not affect student achievement. It is the translation of expectations into practice that is critical. Teachers with different expectations for different students presumably vary their activities with students. One important way in which teacher expectations are likely to be translated into practice is in what content gets taught and how it is taught to particular students. On the one hand, teachers' expectations should be realistic and to some extent teachers' actions need to be geared to the actual abilities and skills of the student. On the other hand, a teacher with high expectations for a student or a given group of students may be more likely to cover more difficult content, to assign more problems for a given lesson, and to attempt to develop skills based on understanding rather than by rote with these students compared to a group of students for whom they have lower expectations. Thus, classification and labeling of Chapter 1 students may have negative effects on these students' achievement if, in fact, the labeling is translated into differing teacher expectations, and these teacher expectations are translated into teachers' actual classroom practice.

Recommendations for the Selection of Students and Services for Chapter 1

Based on the above review of research and theory, I have one general recommendation and eleven specific recommendations for the selection of students and services in Chapter 1. A general recommendation is that the selection of students and services for Chapter 1 might be conceptualized within an aptitude-treatment interaction (ATI) framework.

Recently, Snow (1984) reviewed the research on selection of students and provision of services for children in special education. As I have found to be the case in my review of the research on Chapter 1 programs, he found that special education plans and programs have never been systematically designed or evaluated with an explicit ATI framework. He recommended that special education programs should be so designed and evaluated. He argued that first, aptitude measures should be used to identify students who need special help. Then alternative treatments should be fit to the "aptitude profiles" of these students. Finally, evaluation data should be collected to validate the degree to which these special treatments result in a change in some positive direction for the individual students who are given special treatment. For example, if students' scores on an outcome measure were regressed on aptitude scores for the individuals treated, he hypothesized that two alternative regression patterns would result. These regression patterns are shown in Figure II-1.

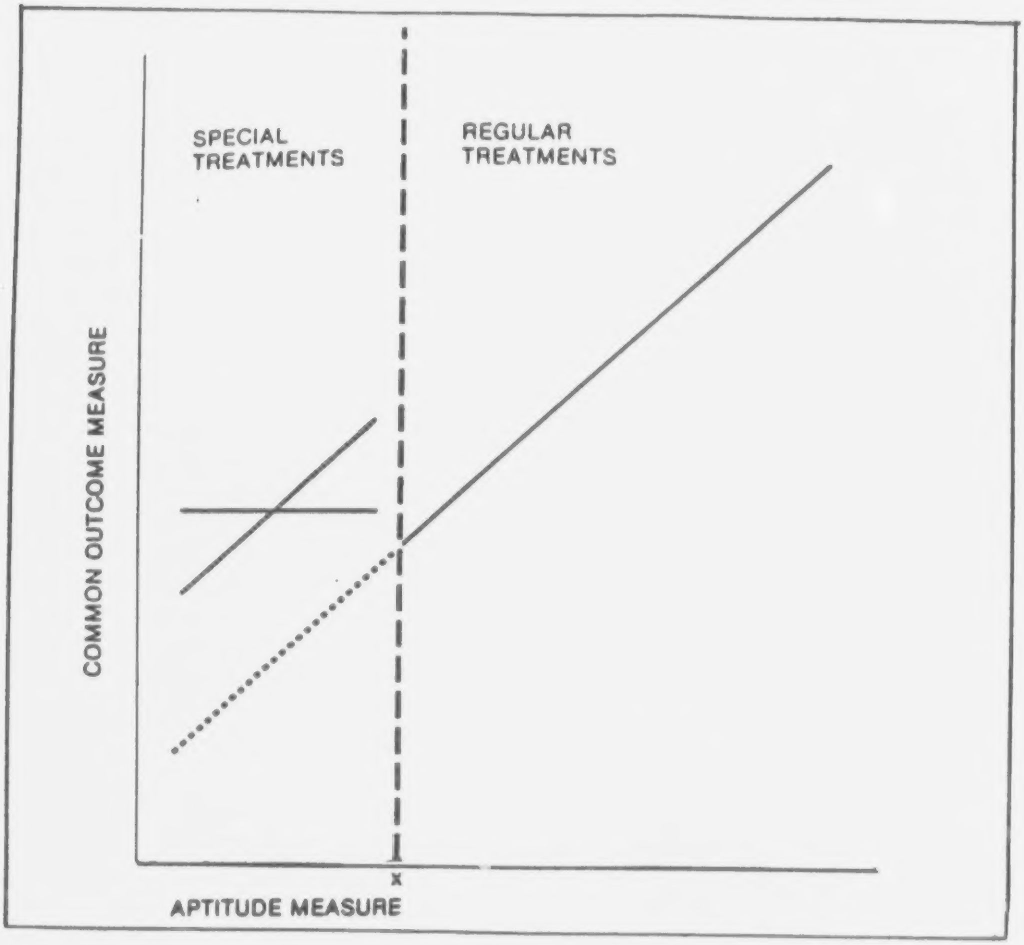
The above ATI model outlined by Snow might be applied in the selection of students for Chapter 1 services, the provision of these services, and the evaluation of the effects of Chapter 1 services. Snow (1984) has outlined the model for how this might be done. For example, in Figure II-1, the aptitude measure would be the students' pretest scores on standardized measures of educational achievement in reading and mathematics, and the common outcome measure would be students' posttest scores on the same standardized achievement test. Data would be collected and decision rules would be applied to establish a cut-off score on aptitude measure. Then Chapter 1 students would be assigned to "special treatments". The effects of Chapter 1 services on these students would be evaluated using the posttest measure of educational achievement. "Main effects" of this special treatment would result in a line parallel to the original regression line as shown in Figure II-1. Another possible result might be the nonparallel regression line shown in Figure II-1. This flatter regression line would indicate that the special treatment had in fact compensated for the "low aptitude" of Chapter 1 students and thereby reduced the strong relationship between initial pretest achievement scores and final posttest achievement scores. For example, this classic ATI pattern was reflected in our study in which we found a flat regression line as shown in Figure II-1 for the thinking skill treatment and a steeper regression line within class for students in the learning time treatment.

In addition to the above general recommendation, I have the following eleven specific recommendations:

1. An educationally relevant and psychologically meaningful criterion--student achievement on standardized tests in reading and mathematics--should be used to select students to receive Chapter 1 services.

2. Data bases should be developed, and these data bases should be analyzed to arrive at sophisticated decision rules for selection of students to receive Chapter 1 services.

3. Using an aptitude-treatment interaction framework, data bases should be developed to examine the effects of the decision rules and the provision of Chapter 1 services on individual students' achievement.



Note: Hypothetical regression discontinuity analysis in which special treatments given to persons scoring below X on the aptitude measure are judged valid if they displace the regression upward through a change in slope or intercept for the specially treated persons, relative to the common regression line. Two possible displacements are shown.

Source: Snow, 1984.

Figure II-1. Hypothetical Regression Discontinuity Analysis

4. In addition to data at the level of the individual student, data should also be gathered at the level of the classroom, instructional group, and school so that analyses might focus on the effects of mean achievement and the distribution of achievement at each of these levels.

5. Chapter 1 services should be provided in such a way to promote integration of the academic content for the student and integration across learning tasks not fragmentation.

6. Chapter 1 services should focus on teaching higher-order skills as well as basic skills in reading and mathematics; instruction should also be provided to teach learning strategies or "aptitude processes" that will facilitate students' learning of lower-order and higher-order skills in reading and mathematics.

7. Teachers of students in the Chapter 1 program should make effective use of "direct instruction."

8. In the provision of Chapter 1 services, the focus should be on the quality of instructional time not just the quantity of instructional time. Further, instruction should focus on promoting the cognitive involvement or cognitive engagement of students not just apparent student engagement in the learning task.

9. Opportunity should be provided for lower-achieving students (Chapter 1 students) to participate in heterogeneous ability groups of students as well as homogeneous ability groups of students including both teacher-led instructional groups as well as student-led cooperative peer work groups.

10. Given the ineffectiveness of pullout programs, schools and school districts should be encouraged to consider "creative" alternatives to the provision of Chapter 1 services. The implementation of creative alternatives to pullout programs may require the revision of the wording "supplement not supplant" in the Chapter 1 legislation.

11. Students should be selected and Chapter 1 services should be provided in such a way as to minimize potential "labeling" effects on targeted students.

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SELECTING STUDENTS AND SERVICES: REACTIONS

by

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SELECTING STUDENTS AND SERVICES: REACTIONS

In these reactions to the papers by Kennedy, Jung, and Orland (1986), and Peterson (1986), I am admittedly developing a thesis of my own, and I might as well spell it out right up front. It is that school districts should be allowed to use Chapter 1 funds to support programs designed to improve schools serving large numbers of children from poor families, without the necessity of designating specific children as disadvantaged. If pressed, I might even argue that Chapter 1 should shift from student targeting to school targeting, but I'll settle for school targeting as an option.

The general argument runs as follows: (1) in spite of heroic efforts to target students, more non-poor, high-achieving students are receiving compensatory education than are poor, low-achieving students, and only 40 percent of the poor, low achievers are receiving Federally supported compensatory services; (2) schools serving large numbers of poor children are the most difficult schools in which to educate children; (3) student targeting prevents practices that are known to be effective, and encourages practices that are known to be ineffective or may have negative side effects; and (4) school targeting would allow educators to apply what has been learned about school improvement.

The Kennedy et al. paper focuses upon the relationship between poverty and achievement. In addition to being a very useful review of that domain, it provides some new analyses that take into account the length and intensity of the poverty experience. One point they make that is relevant to the school targeting argument is the "achievement scores of all students--not just poor students--decline as the proportion of poor students in a school increases" (p. II-10). Thus all students in a poverty-area school are at an educational disadvantage.

There is an important aspect of the poverty-achievement relationship that they did not deal with, and that has to do with why the relationship between poverty and achievement at the school level is much stronger than it is at the student level. In terms of correlation coefficients, the student level correlation runs about .30, while in some school districts the school level correlation can be as high as .90 between school achievement means and the percent of children in school that are above some poverty indicator.

The high correlation at the school level is due to something that statisticians call the grouping effect. This occurs when membership in the group (e.g. school) is related to either one or both of the variables being correlated. For example, the socioeconomic homogeneity of neighborhood schools produces a relationship between socioeconomic status (SES) and school, and that relationship produces the larger correlation between SES and achievement at the school level than is found at the student level. When school districts desegregate, for example, the school level relationship decreases because of the increase in socioeconomic heterogeneity within schools that usually results from that integration.

It is also important to understand the participation rates that national studies produce. I find Figure II-2 helpful in thinking about this problem. The broad ellipse in Figure II-2 outlines the distribution of students on two dimensions, socioeconomic status and achievement. Students to the left of the vertical dashed line represent those in the bottom quarter on SES, and those below the dashed line represent students in the bottom quarter on student achievement. Thus students in quadrant A represent low-achieving students from poor families.

As indicated above, this student level correlation is only about .30, so there are lots of poor students who are not low achievers (quadrant B), and lots of low-achieving students who are not from poor families (quadrant D). In fact, only about 10 percent of the student population is in quadrant A, and about 40 percent of those low SES, low-achieving students receive Chapter 1 services. This supports the claim that a majority of the most needy do not receive services. It is also true that 8 percent of the students in quadrant C do receive services, and 8 percent of that large population represents more students than the 40 percent of the students in quadrant A. This supports the claim that more non-poor, high-achieving students receive services than do poor, low-achieving students.

Who should be receiving Chapter 1 services has been a central argument throughout the history of Chapter 1. Some feel it should be the students in quadrants A and B (children from poor families), while others argue that it should be for low-achieving students (quadrants A and D). What happens in practice is that students come from the entire distribution of ability and SES. Targeting studies have focused upon how best to target students rather than on whether it makes more sense to target schools. That possibility needs to be given more consideration. In the initial Title I act, schools could use their Title I funds to support the general improvement of programs in a school: we need to understand why that practice was stopped.

I am not claiming that school targeting would serve more needy students, for it would serve about the same mix. I am arguing that disadvantaged students would be better served under school targeting because the kinds of programs that would

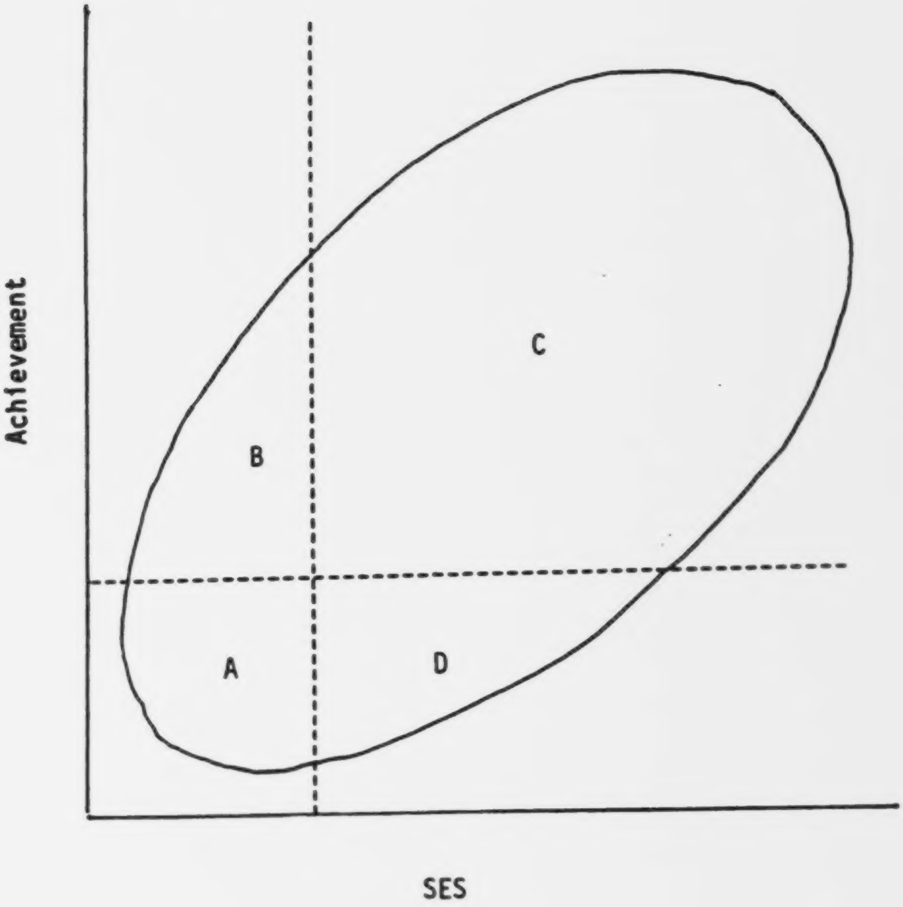
Achievement
B
C
A
D
SES

Figure II-2. Relationship Between Family SES and Student Achievement

be possible would be more educationally defensible. To address that issue, I want to turn next to the Peterson paper and look at what is known about effective instruction.

As Peterson points out, the dominant method of providing Chapter 1 services is to remove eligible students from the classroom for pullout instruction. As she points out, the evidence regarding the effectiveness of pullout programs ranges from negative to a statistically significant but educationally insignificant positive. No one seems to argue that such instruction has been shown to do the job compensating, that is, producing less educationally disadvantaged students.

Peterson then goes on to analyze what is known about effective instruction, and the implications of that knowledge for Chapter 1. She points out the importance of integrating instruction, and the tendency of pullout instruction to be fragmented. She also shows how pullout programs can affect the way children are grouped for instruction, and the disadvantages of homogeneous ability groups and the benefits of heterogeneous ability groups. For example, "small group cooperative learning interactions would be most productive in groups in which students differ in ability levels and expertise" (p. II-44).

A probable unintended negative side effect of student targeting is the result of labeling students as disadvantaged. The negative effects of labeling are well established. Peterson also helps us to see a probable mechanism for that negative effect based upon "the principle of compensation," in which less able students are given less demanding tasks, and as a consequence learn less.

One of the things that she did not go into is school level problems. Some of these are created by student targeting. These have to do with scheduling craziness that is introduced to make room for the Chapter 1 sessions (both in terms of time and space), the disruptions that are introduced by additional movement of students in and out of classrooms, and morale problems among teachers because of conflicts over such comings and goings. Other school level problems might be solved with additional resources, but student targeting precludes their use for general school improvement purposes. School boards tend to be unwilling to spend more money in some schools than in others unless those funds are for special, categorical programs. School level problems tend to be most severe in schools in high poverty areas.

A lot has happened since Federally supported compensatory education was introduced in 1965. A lot has been learned about learning, about effective schools, and about compensatory education. Title I and Chapter 1 have been the most heavily studied educational programs in history. It is very important that the fundamental goals and assumptions of compensatory education be re-examined. This national assessment of Chapter 1 being conducted for Congress by the Office of Educational Research and Improvement provides a great opportunity for that re-examination. I certainly hope that the improvement of schools serving impoverished neighborhoods is a Chapter 1 option that emerges from this assessment.

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SELECTING STUDENTS AND SERVICES FOR CHAPTER 1: REACTIONS

by

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SELECTING STUDENTS AND SERVICES FOR CHAPTER 1: REACTIONS

This paper addresses two central questions in the design of the program of Chapter 1 of the Educational Consolidation and Improvement Act: How should students be selected to receive services and what kinds of services should be delivered by the program? As part of the discussion of these questions, a few comments are made about the two excellent papers prepared for this session, "Poverty, Achievement and the Distribution of Compensatory Education Services" by Kennedy, Jung, and Orland and "Selecting Students and Services for Compensatory Education: Lessons from Aptitude-Treatment Interaction Research" by Peterson.

This paper argues for two major changes in the selection of students and in the way that services are delivered in the Chapter 1 program. The first change would target Chapter 1 funds only to schools with very high proportions of children whose families live in poverty. The second change would encourage the use of Chapter 1 funds in school-wide programs to augment and improve the quality of the regular school program in these high poverty schools. Each of the changes can be generated through alterations in the Chapter 1 legislation. Although a compelling case can be made for both sets of changes, each would spark considerable political and substantive debate partly because each alters the distribution of resources.

There are four sections to this paper. The first sketches general premises which help lead to the two sets of recommendations. The second considers the question of who should be served and the third section addresses what kinds of services should be offered? The final section summarizes the key recommendations and the rationales for the recommendations.

Premises

Six general and interrelated premises influence my thinking about Chapter 1. They and some of their implications for the program are summarized below.

1. For twenty years Chapter 1 and its predecessor, Title I of the Elementary and Secondary Education Act (ESEA) of 1965, have served as a powerful symbol of the intent of the Federal government and the nation as a whole to provide equal educational opportunity to poor children (Smith, 1984; Kaestle & Smith,

1982). This argues that it would be a major mistake to eliminate or even reduce the program.

2. Chapter 1 programs have been implemented primarily at the elementary school level in grades K-6. The overwhelming percentage of the programs have focused on improving the reading and mathematics achievement of low-achieving students. Clear data from a number of sources show that Chapter 1 programs, on the average, have had only modest short-term and no long-term sustained effects on the reading and mathematics achievement of targeted students (Kennedy et al., 1986; Kaestle & Smith, 1982; Wang, Bear, Conklin, & Hoepfner, 1981; Kenoyer, Cooper, Saxton, & Hoepfner, 1981; Hoepfner, 1981; Rogers, Landers, & Hoepfner, 1982). Over the years Chapter 1 has changed in a variety of marginal ways, yet the general conclusions about overall effectiveness have not changed. These findings suggest that further tinkering at the margins of the program will have little likelihood of producing major improvement in its overall effectiveness. Major changes in the program might be necessary to measurably improve its performance.

3. Our understanding of how to deliver effective educational services to poor children has changed dramatically since 1965 when Title I was first authorized and since 1972-1976 when the legislative framework was fully established. We have new knowledge about how students learn, about the nature and content of effective instruction, about the characteristics of effective schools, and about the implementation of educational reform. This new understanding has important implications for the selection of students and the delivery of services (Peterson, 1986; Romberg, 1986; Calfee, 1986; Hallinan, 1986; Brophy, 1986). In a substantial number of ways Chapter 1 rules and regulations make it difficult to put this new knowledge into use. There are clear directions for major changes in the program, and there is considerable promise for improving the way that Chapter 1/ Title I programs are delivered and implemented.

4. Poverty has a substantial and pervasive effect on the individuals in poverty and on the society as a whole. Although many children in poverty do very well in school, there is a robust relationship between the achievement of a child and the level of resources that the child's family can afford. This relationship is especially strong for children in families

which are in poverty over substantial periods of time. Moreover, there appears to be an independent and negative effect on a student's achievement of a high density of poor children in the student's neighborhood and school. Finally, the number of poor children in the nation is increasing, poor children are found in disproportionate numbers in minority groups which continue to suffer from significant discrimination in the society, and there seems to be an increasing concentration of poor and minority group children in the inner cities of the United States (Kennedy et al., 1986; Kaestle & Smith, 1982; Levin, 1985, 1986). There is a special need for Chapter 1 funding in districts and schools with very high densities of poor children. These are typically inner-city and poor rural areas.

5. Over the past 15 years there has been some improvement in the reading and mathematics achievement of minority and poor students relative to the achievement of middle-income youngsters. By some estimates the gap between the two groups in the elementary and middle grades has closed by upwards of 25 percent. This very encouraging sign suggests that further attention to the problem will yield benefits. Yet, the gap has closed by less in the later grades, and there appears to be some decline on measures of higher-order academic skills. The effect on early achievement may be due in part to the symbolic effect of Chapter 1 but does not seem to be directly due to the effects of the program (Kennedy et al., 1986; Peterson, 1986). Alternative, plausible reasons are the effects of desegregation (particularly in the South) and the multiple attempts at school reform in the cities—reform which has operated independently of Title I (Koretz, 1986; Levin, 1986).[1] The lack of a clear achievement effect in later grades is mirrored by depressingly high (upwards of 40-50 percent) and, by some reports, increasing dropout rates (since 1974) for poor and especially Black and Hispanic groups in the cities.[2] This effect may be related to the relative degree of inattention given to the middle and high school years by education reformers in the 70s and early 80s, to the increasing degree of inequality of family incomes in the society within the Black and White populations which is reflected in an increasing concentration of the poor in the cities, and to the lack of clear rewards (such as jobs) that would result to poor and minority students as a consequence of their graduating from high school (Kennedy et al., 1986; Levin, 1985, 1986).[3] Thus, Chapter 1, if changed in a way that

would promote positive effects, could be especially useful in middle and secondary schools as well as elementary schools.

6. The status of the poor and minorities in the society and the quality and equality of the educational opportunities of their children will not be fully resolved by changes to the educational system--increased job opportunities and public commitment to the eradication of poverty are required. Yet recent data indicate that the quality of education has a substantial impact on the life chances of students.[4] It appears clear from past data summarized above, that marginal changes in the quality of education will not have a great effect on the opportunities of poor and minority students. Major, systematic change to our educational programs for the poor is necessary to meet a social goal of equal educational opportunity.

Who Should Be Served by Chapter 1?

A substantial part of the Kennedy et al. paper deals with the technical and substantive sides of this question. It does not consider, however, the normative and political sides of the issue. Congress decides who should receive the services of Chapter 1 after members have reviewed data on the past successes and failures of the program, weighed information about the needs of students and educational systems throughout the nation and about ways of improving educational opportunity and quality, and made political judgments based on their own experiences and sets of values and the pressures brought to bear on them by their political friends and enemies.

The weight of this process is heavy on the side of making few significant changes in existing legislation even when the data show that the program has only minor overall effects. Major change generally creates a situation where some of the present "winners" lose resources unless the overall pool of resources is dramatically increased, an unlikely prospect. Since those presently receiving resources know they have a stake, they mount pressure to justify the present system and suppress significant change. Local constituent groups make cogent arguments based on the facts that, if there were to be major change, many effective programs would lose funding and considerable educational and personal disruption would occur. With literally tens of thousands of separate Chapter 1 programs in schools, there are hundreds of very productive ones, even though the average effect of all of the programs is minuscule.

Another force that protects programs is a coalition of dedicated staff of Congress, the Executive Branch, and the educational associations based in Washington. For Chapter 1, this group is reinforced by many of the Civil Rights organizations. A great number of the people in these organizations have fought for the rights of children for 20 years and see any suggestion of change in Chapter 1 as a direct attack on the concept of equal educational opportunity.[5]

A major goal of many of these groups in the past has been to reduce the chances for significant change to occur in this 20-year-old, relatively stable, and now, unthreatening program. It may be, however, that the accumulation of new knowledge about effective educational practice and the present spirit of educational reform have altered the odds for major change in the way the Federal government and the nation as a whole provides educational services for poor children. It should be possible to change direction in a program if it can be cogently shown that the present system is ineffective and inefficient and that there are plausible alternative approaches that promise greater effectiveness and efficiency. The first section of this paper touched on the issue of the effectiveness of the current program and argued that its value was largely in its symbolism. The argument that effectiveness can be improved is addressed in the next section of this paper in the discussion of the nature of the services. In the remainder of this section I consider the issue of efficiency. I will argue that the present allocation system necessarily leads to an inefficient distribution of resources to meet the needs of poor, low-achieving students and that the data presented by Kennedy et al. document this inefficiency and suggest a more efficient allocation system.

In their paper Kennedy et al. review the legislative intent and the current legislation and regulations that guide the Federal, state, local, and school-level allocation of resources. They also review data on the relationship between poverty (individual and collective) and achievement as part of their assessment of the validity of the framework. To develop an argument for altering the present allocation strategy, it is necessary to review both the present framework and the evidence amassed by Kennedy and her colleagues.

The legislative declaration of policy that has driven Chapter 1 for two decades "recognizes the special educational needs of children from low-income families and the impact that concentrations of low-income families have on the ability of local educational agencies to support adequate educational programs" and calls for it to be a "policy of the United States to provide financial assistance to local educational agencies serving areas with concentrations of children from low-income families to expand and improve their educational programs by various means which contribute particularly to meeting the special educational needs of educationally deprived children.[6] To meet this policy, Congress over the years has developed and occasionally modified a variety of more explicit legislative language. In response to the language of the law, the administrative branch of the government (first the Department of Health, Education, and Welfare and now the Department of Education) has developed extensive regulations and other administrative, sub-regulatory guidance for states and local education agencies. In brief, Chapter 1 funds[7] are allocated in the following fashion:

- o The total appropriation for the basic grants program is distributed among states and then within states to counties proportionally to the number of youth aged 5-17 who are in families that fall under the poverty guidelines. The number of poor youth in the various counties (and hence aggregated to states) is estimated using the most recent census. There is some adjustment made for the number of youth in families receiving Aid to Families with Dependent Children.[8]

- o Within counties, funds are distributed to local education agencies generally in proportion to the number of poverty students, usually measured by eligibility for free lunch.

- o Within local education agencies (LEAs), funds are distributed to schools according to a flexible set of guidelines. In general, LEAs have the authority to select grade levels to be targeted and to specify the goals and magnitude of programs within the following kinds of constraints: schools must be selected in order on the basis of their percentages of poverty students (free lunch eligibility is usually used as the poverty measure) with the greatest poverty schools within a district receiving first priority; at least one-half of all schools within a district and any school that has a poverty percentage of at least 25 percent is eligible. After the selection of grade levels, schools are often stratified into elementary, middle and secondary before the other rules are applied.[9]

- o After a school have been selected and the nature of the program and grade levels decided on, students are chosen to participate in the program. The legislation and regulations require that the lowest achieving students be selected. Most school and LEAs use standardized achievement tests (and often other means) to assess potentially eligible students in appropriate areas, such as reading or mathematics.

> The number of students selected depends on the size and nature of the Chapter 1 program, though in general the regulations require that the poorest schools have the largest programs.

The Kennedy et al. paper presents a variety of interesting data that generally support two basic assumptions of the legislation and that are reflected to some degree in the allocation system: that family poverty, especially long-term poverty, is clearly associated with low student achievement, and that schools and communities with strong concentrations of poverty have an added negative effect on student achievement above and beyond the student's individual family status.[10] A major contribution of their paper is to document the argument that students from low-income families who live in areas with a high concentration of other poor families have a double dose of disadvantage: their families are unable to give them certain advantages that other students have, and their schools, for a variety of reasons, are not as able to aid them in achieving academic success as schools with an affluent student body. Moreover, poor students in these areas (the inner-cities and poor rural areas) are more likely to be in families which are in long-term poverty; these students are more likely to be low-achievers than students who are only temporarily in poverty and are more likely to require long-term attention.

Yet, while the legislation and regulations generally reflect this logic, the data on the distribution of Chapter 1 resources indicate that there is a lot of slippage.[11] With a small exception little special treatment is given in the legislation or the regulations to areas with a high concentration of poor children; in the distribution of over 90 percent of the funds a poor child in an affluent LEA counts as much in the allocation system as a poor child in the inner-city or in the poorest county of Kentucky.[12] And, no special provision is made for children in long-term poverty. The provisions that allocate the funds to states and to counties and finally to LEAs spread the money very thinly to almost all of the 14,000 separate local educational agencies in the nation. Thus, in almost all school districts with only one school in total or only one elementary and one secondary school, there is a Chapter 1 program serving elementary pupils. In larger districts, the regulations allow the Chapter 1 program to serve at least 50 percent of the schools serving the selected grade levels. In most communities the politics of the distribution of resources requires the administrators and school board to spread the funds out as much as possible. Overall, Kennedy et al. estimate that 70 percent of all elementary schools in the nation have a Chapter 1 program. This is tragically inadequate targeting for a program intended to reach low-scoring students in high poverty schools.[13]

The actual application of the rules and regulations also leads to situations which clearly go against the philosophy of the program. Let me give two not extreme examples. In Madison, Wisconsin, a city that spends over $5,000 per pupil and has an average elementary class size of under 23 students, there are Chapter 1 programs in schools which are in the 70th achievement percentile of all schools in the nation. Contrast the need in these schools with that in the hundreds of inner-city middle and secondary schools that average in the bottom quartile of achievement and that graduate under 60 percent of their students but do not have a Chapter 1 program because there are insufficient funds in these cities to serve middle and secondary schools. In suburban systems throughout the nation there are schools with 10 percent or less of the student body in poverty receiving funds because they are in the top half of the schools in their system in poverty percentage, while in city schools throughout the nation there are schools with considerably more than 15 percent poverty that are ineligible because they are below the district average (Kennedy et al., 1986).

Kennedy et al. present extensive data that show these problems in another way. Using data from the Sustaining Effects Study (SES) they show that substantial numbers of children served by Chapter 1/Title I in fact are neither in poverty nor score in the bottom 50 percent of standardized achievement tests. They also show the other side of the coin--to wit that there are substantial numbers of poor and low-scoring children who are not served by the program. Using data gathered just on elementary school children, they estimate that Chapter 1 does not serve 68.6 percent of poor students, 64.9 percent of students achieving below the 25 percentile in achievement, 57.9 percent of poor and low-achieving students, and even 55.1 percent of poor and low-achieving students who are in Chapter 1 schools.[13]

These are not surprising figures when we consider the allocation mechanism for Chapter 1 funds. The distribution of funds to almost all LEAs and to over 70 percent of the elementary schools of the nation means that many affluent schools with relative high-scoring children receive Chapter 1 funding. Moreover, unless the appropriation level is dramatically increased, this distribution guarantees that the funds are spread hopelessly thin; programs in many of the poorest schools with very low-scoring children are far too small to serve even a major percentage of the needy students.

What should be done to make Chapter 1 targeting more efficient? A typical response to this question has been to advocate tightened fiscal accountability regulations on the distribution of funds within schools without changing the fundamental distribution system. This approach cannot succeed.

If funds continue to go to 14,000 LEAs and 70 percent of the elementary schools in the nation, no tightening of within school criteria will change the fact that many of those students deepest in poverty will never have a chance to receive Chapter 1 services while many relative affluent and high-scoring students will be served by the program.

The alternative seems clear from the data presented in the Kennedy et al. paper. To increase efficiency in the allocation of funds to the nation's neediest students the targeting must be improved. We must expand the level of allocation to schools with high concentrations of poverty students. To accomplish this in a time of constrained resources, funds must go to fewer LEAs and to fewer schools within the LEAs. The concentration of funds cannot be minor--to make a significant change in educational opportunity for our neediest children the resources brought to bear on the problems of schools in our inner-cities and poorest rural areas must be considerable. The final section of this paper suggests a practical approach to the targeting problem.[14]

What Services Should Be Offered by Chapter 1?

One aspect of the allocation system was not considered in the preceding section. I did not discuss how students within schools would be selected to participate in Chapter 1 programs. The reason is that this issue is intimately tied to the issue of services to be offered.

In the present system students within a school are identified as eligible to receive Chapter 1 services because they give evidence of low achievement through achievement tests and teacher judgment. In over 75 percent of Chapter 1 schools, students are "pulled out" of their regular classrooms to receive compensatory instruction. In upwards of 50 percent of Chapter 1 programs the students are actually pulled out of their regular reading or mathematics class and placed in another setting for their compensatory instruction in the same subject. The Peterson paper at this Conference offers a succinct critique of the pullout approach. She and others find that it has a number of inherent flaws that influence its effectiveness.[15] These include:

- Students are stigmatized by identification as a Chapter 1 students who need special attention. They are labeled as "slow," or "dumb," or worse, by other students, by their parents, by teachers, by themselves, and in their permanent records.

- The instructional program for these students is _fragmented_.[16] The regular and Chapter 1 staff are often physically and administratively separated in schools. They often use different textbooks and pedagogical strategies. For many Chapter 1 students, their "regular" teacher does not instruct them during the time when they are supposed to be learning one or more of the core subjects of elementary school (math or reading). Yet reading and mathematics are "taught" all day long by most effective elementary school teachers--in instances where a child is pulled out for reading or math the "regular" teacher has no way of knowing the child's needs. Across years there is fragmentation within the Chapter 1 program. Students who succeed in the program by improving their scores sufficiently are not allowed to stay in the program while others are newly placed in the program. A certain amount of this movement happens simply due the unreliability of the tests and the "regression to the mean" phenomenon.

- Pulling the student out removes the _responsibility_ for the education of the student from the "regular" teacher. The fragmentation of responsibility makes it impossible to hold anyone accountable.

The reason that the pullout instructional model became the dominant approach in Chapter 1 stems from a record of early abuses of then Title I funds--funds were spent for activities and resources unrelated to the purposes of the program. To tighten accountability, Congress instituted a set of fiscal requirements in the late 60s and early 70s.[17] A substantial number of these requirements operate at the building level. They require the LEA to insure that Chapter 1 schools receive the level of resources from sources other than Chapter 1 that they would have received had there not been Chapter 1 _and_ this level be at least comparable to the level received by non-Chapter 1 schools in the same LEA.

One fiscal requirement operates on the expenditure of resources within schools. This requirement is generally called the supplement- not-supplant provision. It is interpreted as stipulating that Chapter 1 funds cannot be used to pay for anything within the school that would otherwise be paid for by another source. A second provision, the excess-cost requirement, stipulates that Chapter 1 funds can only be used to pay for the excess cost of services used exclusively by Chapter 1 students. Thus, for example, Chapter 1 funds cannot be used for teacher inservice programs which include teachers who are not Chapter 1 teachers, nor can they be used to pay the salary of a teacher who teaches some non-Chapter 1 students, nor, for years, could they be used for Chapter 1 paid teachers to assist regular teachers to oversee students in the halls or the playgrounds, if the duty included monitoring some non-Chapter 1 students.

In their attempt to implement this requirement, the U.S. Office of Education and state departments of education (SEAs) issued regulations, guidelines, and other non-regulatory guidance and provided technical assistance to LEAs to help them design delivery mechanisms which were legal. The dominant choice to create a "clean" fiscal trail was to create, in effect, a separate system within the school. Their goals were to keep the Chapter 1 teachers as separate as possible from the core program of the school, deliver Chapter 1 services in separate settings, and have separate technical assistance and reporting lines. By and large they succeeded.

Over the years, as Gaffney (1986) points out, there have been changes in the regulations and in the legislation which should influence the way that the fiscal requirements are interpreted. Existing Chapter 1 law (and Congressional language in the 1978 Amendments) even explicitly states that pullouts are not required by Chapter 1. And in 1981 Congress repealed the excess-cost amendment. Pullouts never were required, but the simple fact is that responsible people in state and local agencies believed that it was certainly the easiest, and to some the only, way to meet the law. The District Practices Study carried out in 1983 with Department of Education funds found that the central reasons given by district administrators for using a pullout design were that: (a) it was easier to demonstrate compliance with Chapter 1 accounting requirements (73 percent) and (b) that the State Chapter 1 office recommended its use (50 percent). Only 18 percent of district administrators who used a pullout design indicated they believed it was educationally superior to any other mode of delivery.

The primary alternative to pulling students out for Chapter 1 services is to deliver services within the classrooms. According to the District Practices Study a substantial number of districts (30 percent) report using this design often as well as the pullout model. Gaffney discusses this Chapter 1 option in his analysis of the flexibility of the regulations. In a related paper presented at this Conference, Archambault (1986)[18] considers the evidence of in-class Chapter 1 practices and concludes that in-class strategies also suffer from problems of stigmatization and fragmentation. Although many find this surprising, the reasons seem obvious on reflection. The Chapter 1 fiscal trail also reaches into the regular classroom to influence instructional strategy. Within classroom approaches require that children be identified and that separate instruction be administered, generally by Chapter 1 teachers rather than the regular teachers. The forces to label, to reduce the continuity and organization of instruction, and to relieve the regular teacher of responsibility for the outcomes operate in this model just as in the pullout model. And the same restrictions on whole school activities such as inservice training to coordinate instruction apply for the within classroom models.

There is little wonder that data indicate, on average, (a) that Chapter 1 has little short-term and no sustaining effects and (b) that there is little systematic difference in the effectiveness of pullout and in-class models.[19] Because both models suffer from clear shortcomings, it is not surprising that Archambault concluded that instructional setting does little to determine the effectiveness of Chapter 1 programs. It seems clear that it is not useful to continue research that contrasts in-class and pullout instructional models in Chapter 1, each of which is required to identify and instruct children separately. So long as the supplement-not-supplant provision operates in Chapter 1, research directed at improving compensatory education, as Archambault insists, should be on the content and instructional strategies used in the Chapter 1 programs.[20]

Can anything be done to overcome the problems created by the fiscal tracking of funds down to the level of the student? Suppose that the supplement-not-supplant provision did not exist.[21] Suppose that in Chapter 1 schools there were no specific students identified as eligible for Chapter 1 and, instead, all students in the school were seen as "at risk" academically. Under this approach funds from Chapter 1 could be used to upgrade the quality of the entire school. Following the discussion of effective teaching strategies in Peterson and the extensive research on effective schools, the Chapter 1 funds could be employed in ways that have a substantial backing in the literature.[22] Chapter 1 funds could be used to lower class size, to assist teachers in improving the curriculum of the school, to provide school-wide inservice training, and to establish constructive programs with students' parents. Following the guide of the literature, the teachers and administrators within the schools could be responsible for the development of strategies to maximize the achievement of the neediest students. This would give the entire staff control over the nature and content of the instructional program, a condition which is related to the efficacy of the staff and hence to the effectiveness of the program (Good & Brophy, 1986; Purkey & Smith, 1983).[23]

This is not a new proposal. Three sets of arguments are generally raised to respond to it. The first is that by spreading the Chapter 1 funds throughout the school they would be too diluted to have much effect. After all, in many Chapter 1 schools there are not many poor and low-achieving students and, if the little Chapter 1 funds received by the school are not targeted to the level of the child, they will not be useful. One part of the answer to this argument is that Chapter 1 funds should only go to schools with high densities of poverty children for all of the reasons given in the early part of this paper. In schools with very high densities of poverty children _all_ of the children are at risk. The percentage of _long-term_ poverty children is high in these schools. And the percentage of very low-achieving students is greater than would be expected on the basis of the poverty percentage itself. Moreover, substantial numbers of children will be at the margin on achievement measures; in schools with fewer problems and greater resources these students might accomplish far more. It makes great sense to approach the overall problems and quality of schools of this sort rather than to fund programs of dubious value that are deliberately on the margins of the school.[24]

A second part of the answer is that schools with high densities of poor children should receive substantial levels of Chapter 1 funds; the funds should not be thinly spread. For example, a 1,000-student elementary school with 40 percent poverty might receive an allocation of $200,000 ($500/student for 400 students). Such a school might have a staff of 40. A Chapter 1 allocation of this magnitude might be used to reduce class size in the early grades by 3-4 students, _and_ to put the entire staff through an intensive summer workshop on ways of improving their curriculum and teaching, _and_ to purchase new materials to aid teachers in teaching problem solving and critical thinking, _and_ to pay for a part-time coordinator to encourage parents to work with their children, _and_ other programs. The point is that the overall quality of the school, its climate, curriculum, relationships with parents, and the expectations of its teachers could be influenced by Chapter 1 _if_ the funds were targeted to high poverty schools and used to influence the program of the entire school.[25]

A second argument used against this proposal is that accountability is lost if the dollars are not tracked and that the funds will be spent on frivolous things unrelated to the needs of the poor and low-achieving students. There are two ways of addressing this important issue. The first is to shift the discussion of accountability from _resources_ to _outcomes_. At the present time the central way that we _know_ that Chapter 1 is aiding poor and low-scoring students is to follow the dollar trail so that we are able to identify specific services paid for by Chapter 1 that are received by prespecified children. Although there are often carefully carried out evaluations of Chapter 1 programs, the local school or the local school system are not held accountable if the results of the evaluations are negative.[26] They are only held accountable if the funds are not spent in the prescribed fashions to meet the fiscal requirements. The alternative is to require in Chapter 1 that the local school and the LEA establish a set of outcome goals that are monitored by the state education agency and, perhaps, ultimately, by the Federal government. At the elementary school level these goals would be expressed in terms of reading and mathematics test achievement gains for the entire school and for the lowest scoring in the school.[27] At the middle and secondary level achievement and attainment goals might be established. The key is that they are school-wide goals involving the effort of all of the teachers and other staff within the schools. Within boundaries the teachers and staff of the school would be responsible for setting the goals.

But so what, you say. Suppose that goals are set and then not met. Where is the exercise of accountability? Wouldn't we be in the same situation as we are presently, without a means for exercising any clout? This leads to the second way of addressing the accountability problem. It would have four parts:

a. Schools would be expected to establish school-wide outcome goals (within certain constraints established by legislation). The goals would cover a three- to five-year period.

b. The school staff would develop a school- wide instructional plan to reach the goals which would be reviewed and approved by the SEA.

c. Outcome assessments would be carried out by the LEA on a yearly basis and reported to the SEA and to the public. As part of its application for Chapter 1 funds the LEA would be expected to establish incentives for schools which reach their goals.

d. If, after three years, the school was not reaching its goals, it would be required to modify its instructional plan in a significant fashion. If after a second three-year period the goals were still not being met, the LEA would be required to go the SEA with a new plan to change the administrative and instructional staff and pedagogy of the school so that it met the needs of its students.

There are lots of other possible schemes for insuring some accountability. This particular one has three desirable components: outcome goals and plans developed by the staff for achieving the goals; incentives for reaching the goals; and a graduated set of procedures for improving the school if the goals were not met.

The third argument that will be used against this approach has a variety of components: one is that we have no assurance that it will "work"; another is that it will eliminate lots of good existing programs; and still another is that it has already been tried in Chapter 1 legislation as an option and that local agencies did not make much use of it. This line of argument may have some truth to it in each component, and each should be addressed. First, certainly the new approach will not always work. But we do have substantial evidence referenced earlier and reviewed by Peterson and others at this Conference that suggests that it will "work" better than the present approach. The evidence is clear that the problems of the very poor and low-achieving must be seen as belonging to the entire school rather than only be the responsibility of the Chapter 1 teachers. The literature on school management, inservice training, discipline and order in the schools, the quality of the curriculum, and school climate and culture all point in the direction of establishing clear goals, high expectations, and whole school planning efforts engaged in by the entire staff (Purkey & Smith, 1983). Moreover, this approach gives a clear system for establishing accountability for the key unit that the central administration of a school system must deal with--the school itself. School administrators and teachers are given the authority to define their programs to meet the needs of the poor and low-achieving and, simultaneously, held accountable for meeting student outcome goals to which they have agreed.

The second part of this criticism is that there would be lots of disruption and many good existing programs would be destroyed. There seem to me to be three responses. First, without question there would be disruption both in communities and schools that would lose Chapter 1 funding because of more efficient targeting and in communities and schools where the programs would be enhanced. But productive change always entails some disruption. If this kind of disruption looms large even in the face of the evidence about the lack of efficiency and effectiveness of the program, we will never improve the education of the very poor in the nation. Second, though some strong programs will no longer receive funding, on the basis of the evidence there would be as many or more weak programs put in jeopardy and overall there will be a net gain. Third, it would be reasonable to let some of the present strong programs continue to exist in schools that continue to receive funding if the schools met the other conditions of developing a systematic set of goals and plans.

The third part of the argument is that the approach has already been tried in Chapter 1 and was neither successful or widely tried by local schools. It is accurate that an approach of this sort was put into legislation in 1978 and subsequently tried by a number of school districts. The reasons for the few attempts by local districts to try the approach, however, is probably not because they disliked it. Rather the Federal legislation was far too restrictive and costly for the local agencies to carry out broad implementation. The legislation carried two major disincentives, a requirement that at least 75 percent of the students be in poverty and a requirement that the LEA augment the amount of money that Chapter 1 provided by a substantial amount over and beyond the normal LEA allocation to the school. Yet even though the nation was entering economic hard times in 1979 and 1980 when this provision came into effect, a number of communities tried to implement the provision. In his paper for this Conference, Archambault mentions the experiences in Los Angeles and Austin where programs had to eventually be terminated because of cost. In Austin, the program was much more effective than a pullout model; students in the school-wide programs gained an average of 2.5 months more in language arts, 2.1 months more in reading, and 2.2 months more in mathematics over a one-year program.

There is little question but that the cost per school would be greater in a whole school strategy. There would also be a smaller number of schools because of better targeting. The question for policy makers is whether they are willing to give up the broad based program touching all of the LEAs and a large majority of the elementary schools and challenge the conventional approach to delivering instruction in return for an approach that has some substantial promise of improving the education of the very poor.

Summary of Proposal for ECIA, Chapter 1

In general, retain the present purposes and Federal/state/local structure for Chapter 1 but propose major, realistic amendments to within that structure to improve the efficiency and effectiveness of the program.

1. Efficiency: Improve the targeting of funds. Target funds only to local education agencies with high concentrations of poverty and to schools within them with very high percentages of poverty children. These schools are primarily in inner-cities and poor rural areas.

   Rationale: Poor students who attend high poverty schools are doubly disadvantaged. Data indicate that their families and schools are less able to help them achieve than are well-to-do families and schools with affluent populations. At present, Chapter 1 funds are spread out to over 95 percent of America's 14,000

LEAs and over 70 percent of our elementary schools. Low-scoring students in affluent communities have multiple opportunities outside of Chapter 1 to receive special attention. Thousands of much less fortunate schools in inner-cities have far higher poverty levels, far lower achievement levels, and far fewer resources and are not served by Chapter 1 because the funds are inefficiently distributed.

2. Effectiveness: Let good educational practice rather than accounting practice shape Chapter 1 programs. In schools with high levels of poverty (say twice the national average), let the fiscal trail for Chapter 1 funds stop at the school building door and the funds be used to upgrade the quality of the entire school. For these schools, waive the supplement-not-supplant requirement in Chapter 1. In return for the waiver the school should be required to meet an accountability provision (see below).

   Rationale: At the present time children are identified within school buildings as being in Chapter 1 and, generally, are pulled out of their regular classroom for "supplemental" instruction. In many instances they are pulled out of reading or math classes to be given reading or math instruction by a Chapter 1 teacher. If they are not pulled out they are identified within their classroom as eligible for compensatory services. This form of program stigmatizes the child, leads to a lack of coordination within the school, and, according to the best available data, has no sustained positive effect on the achievement of the student. Considerable recent evidence on effective schools indicates that we know a lot about ways of improving achievement that would be appropriate if the funds were available for use in the whole school.

3. Effectiveness: Establish systems of output accountability for Chapter 1 schools. Develop incentives for schools that work toward specific goals.

   Rationale: At present, there is no accountability system and there are no incentives for superior performance in Chapter 1. Schools receiving Chapter 1 funds should be required to establish clear goals and plans relating to improved academic outcomes and then be rewarded if the goals are reached. (Presently, if a school is too successful it loses its Chapter 1 funds.) If schools are not successful in attaining their goals they would have to modify their plans in a significant fashion; if they are not successful for back-to-back three-year periods the LEA would be required to take specific action or lose funds. Care must be taken to stimulate achievement goals that are not too narrow or too tied to a particular test. The key should be to challenge students with a greater range and depth of content. Recent evidence indicates that low-income and minority students in high poverty areas receive such a watered down curriculum that they are guaranteed to fail.

4. Efficiency and Effectiveness: Encourage Chapter 1 funding of middle and secondary schools. Establish incentives for low- income students to graduate, perhaps by using school-business partnerships.

   Rationale: At present almost all of the Chapter 1 funds are used at the elementary school level. If funds were more tightly targeted to very high poverty schools, some funds would be available for especially needy schools beyond the elementary level. The outcome goals for these schools could include lowering the dropout rates as well as raising achievement. Information about student dropouts indicates that they often believe that there is no incentive for staying in school. If Chapter 1 funds were directed toward improving the entire school, they could be used to work with the local business community to establish incentives such as guaranteed jobs for graduates, as well as for efforts to improve the school curriculum and for tutorial programs.

Endnotes

1. See Kortex (1986) for a recent and interesting overall discussion of changes in achievement test scores over the past few decades. Koretz examines test score changes by birth cohort, an approach which leads to a different set of conclusions than those reached by other analysts.

2. See the Teachers College Record 87 (1986); the entire volume deals with the dropout isue. Also see Levin (1986).

3. Also see publications from the Boston Compact, Boston School Department, and the July 6, 1986, New York Times article on the efforts that Boston and New York City are making to give students a clear incentive for graduating from high school.

4. One source of evidence comes from the effective schools literature. See, for example, Purkey and Smith (1983). Another literature has to do with the relationship between life chances and educational attainment. See Jencks et al. (1981).

5. One way in which the desire to maintain the status quo is expressed is by reference to the "legal framework"--a constructed, internally consistent system of rules and regulations which is argued by its advocates to be inseparable from the intent of program itself. Thus, the justification goes, if the logic of the system of rules and regulations is violated, the violator must have values that are antithetical to the purposes of the program. Michael J. Gaffney's paper for this conference, "Chapter 1: The Choices for Educators," is an example of this tradition. Gaffney describes the "legal framework" for the program and argues that the legislation and regulations both insure that the program meets legislative intent and give great freedom to the local school system. As a variety of people at the Conference pointed out, the paper ignores existing knowledge about program implementation and the damaging effects of misunderstood and externally imposed regulations on the quality of services in reaching its benign conclusions about the real and potential effects of the legislative, regulatory, and sub-regulatory (administrative) guidelines. Gaffney supplies a careful critique of a set of three substantive papers in his session of the Conference. The touchstone for his critique, however, is always the existing "legal framework" ("These proposals [for school-wide staff development] must be assessed in light of the legal framework." [emphasis added]) rather than the potential

positive effect of such proposals for the achievement of poor and low-achieving students. There is an eerie sense of "natural order" here. Gaffney's paper and its references are useful for students of the regulatory structure of Chapter 1 and its predecessor, Title I. The discussion in this section of this paper of the ways that funds are presently allocated in the Chapter 1 may be augmented by the Gaffney paper.

6. These quotes are taken directly from Sec. 101 of Title I of the Elementary and Secondary Education Act of 1965 as reported in "A Report onthe Education Amendments of 1978," H. R. 15, House of Representatives, 95th Congress, 2nd Session, Report No. 95-1137, May 11, 1978.

7. See the Kennedy et al. (1986) and the Gaffney (1986) papers for more detail and for references which supply more detail. The focus here is on the allocation of funds in the general compensatory education program. This discussion does not deal with the special programs for migrants and the handicapped.

8. This description is generally right. For a precise description see the Chapter 1 legislation.

9. The LEA has some options based on provisions in the regulations—for example, funding must go to schools in order of poverty intensity in the schools but if there is very low achievement in a particular school the order may be changed. Overall, however, the basic provisions listed in the text dominate the selection process. See the Kennedy et al. (1986) paper, the papers from the first National Institute of Education Title I study which are referenced in the Kennedy et al. paper and the paper by Gaffney (1986) prepared for this conference.

10. In keeping with one role of this paper (as a critique of the major papers of the session) I have a variety of methodological quibbles with the Kennedy et al. paper though I agree with the general conclusions. Bill Cooley (1986) cited a number of criticisms in his discussion of the papers at the Conference. Especially important are his points regarding the effect on correlations of changing the unit of analysis from the individual to the school. On the general issue of the relationship between poverty and achievement, the argument in the Kennedy et al. paper about which of the measures of social status has the strongest relationship to achievement is not useful. The different relationships depend on many things, including how the independent variables are defined, the variation in the population, and the age and grades of the students. The K. R. White paper (1982) is misleading at

best on these issues. It is difficult to judge some of the other methodological issues in the Kennedy et al. paper since its methodological section (Appendix D) was not attached to the paper.

11. See Kennedy et al. (1986) for more detail on these issues.

12. There is a concentration provision in Chapter 1 that would allow funds to be targeted to the 50 percent or so of the "poorest" counties in the nation. The provision was advocated by the Carter administration and passed by Congress in the 1978 Amendments to Title I of ESEA. The logic behind the development of the provision was similar to the logic of this paper's discussion of the issue, though Carter's analysts did not have the benefit of the kind of analysis that Kennedy et al. have carried out in their paper. The concentration provision can be used only for "new" money (above a current appropriation) and has not proved popular at appropriations time in Congress; it contains less than 10 percent of the Chapter 1 funding for the basic program.

13. The Sustaining Effects Study (SES) data were gathered in 1976 but there is little reason to suspect that the numbers have changed since then. Again I have methodological quibbles with the Kennedy et al. analyses though I agree with their general conclusions. It would be useful for them to estimate the impact of measurement unreliability on their assessments of assignment in Title I. There are at least three sources of measurement error that confound their analyses: error in the original tests used for assignment; error in the SES-administered tests; error in the measure used to assess poverty in the SES.

14. This position can be supported by a relatively conservative view of the Federal role in education. The argument would go something like the following:

    - States have a responsibility to provide a high quality general education to all of their students. The Federal role should be marginal.

    - Because of problems of the national economy and historical accident which transcend state policies, some states and localities within states have particularly high populations of students from poor families.

    - As long as we evaluate students' achievement with measuring instruments that differentiate among and rank them, some will achieve relatively well and some relatively badly.

- Students from poor families, especially those in high poverty communities and schools, are very likely to achieve at a low level on our measuring instruments. Because the problems are so great in these schools, these students will receive less assistance and, therefore, less high quality education than both affluent and poor children in low poverty communities and schools.

- The Federal government has a responsibility from a variety of legislative acts to promote equal educational opportunity.

- A compensatory education program targeted on the highest poverty schools in the nation would be focussed clearly on an extraordinary and marginal role directed at meeting a national need that states may not have the resources to meet.

15. Other authors making the same kinds of arguments are Glass and Smith (1977), Archambault (1986), Smith (1984), Kaestle and Smith (1982), and Kimbrough and Hill (1981).

16. Peterson (1986) has a thoughtful discussion of the fragmentation issue on pages II-24 through II-28 of her paper for this Conference. She sees the problem as especially acute for low-achieving students and finds that pullouts may lead to a fragmentation of content and to less emphasis on teaching higher-order skills.

17. The evolution of these requirements is recounted in the Gaffney (1986) paper presented at this Conference and in its references. See also Kaestle and Smith (1982).

18. This is an interesting and comprehensive review of the literature on instructional settings in Chapter 1.

19. The SES data cited earlier provide the overall evidence of effectiveness. A recent article summarizing these data is Carter (1984). The Archambault paper (1986) also reviews some of this literature. One legitimate question might be about why Chapter 1 has any short-term effect at all given the criticisms mounted against it. There are two answers: The first is that both settings, on average, probably provide a somewhat more intensive instructional setting than does the regular classroom which has not received any extra resources; the second is that a lot of the instructional content of Chapter 1 programs is oriented toward the short-term goal of increasing test scores. As Peterson (1986) suggests this second orientation may distort the instructional programs away from important

longer term goals having to do, for example, with comprehension in reading and problem solving in mathematics.

20. In a provocative paper presented at the Conference, Don Moore (1986) contrasted the degree of coordination and the nature of the fragmentation of the curriculum in Chapter 1 and non-Chapter 1 schools and found that there was little difference. In effect, he found that Chapter 1 did not contribute to a generally low level of coordination and a high level of fragmentation. One conclusion from his presentation is that it doesn't matter whether the Chapter 1 program has a supplement-not-supplant requirement, for no matter what happens the curriculum will be uncoordinated and fragmented. Another conclusion is that it will take a great deal of effort to improve the schools and, while removing the impediments to coordination created by Chapter 1, it will not solve all of the problems, but it might be one place to start. Many of Moore's comments were based on his experiences in Chicago which may have less coordinated and more fragmented schools than some other communities.

21. There would continue to be fiscal requirements if this strategy were adopted. "Comparability," which requires that Chapter 1 schools receive at least the same levels of resources from other sources as do non-Chapter 1 schools, would be maintained. And "maintenance of effort," which requires that Chapter 1 schools receive at least the same level of resources as they did in prior years, would also be maintained.

22. Peterson's conference paper (1986) reviews much of the literature on effective strategies for instruction and some of the literature on effective schools. For more extensive reviews of the literature on effective schools, see Purkey and Smith (1983) and Good and Brophy (1986). For a more extensive review of the teaching literature see Brophy and Good (1986).

23. Much of this literature focuses on the importance of the environment of the school and the level of expectation of the faculty for the achievement of students.

24. Politically, it may be impossible to fund only the very neediest schools. If schools with small percentages of poverty and low-scoring children which receive few resources continued to be funded by Chapter 1, it would be prudent to allow programs targeted toward low-achieving students. Perhaps a cutoff of 40 percent poverty in the school would be reasonable: above that level (which is double the national average) the program would be schoolwide; below that level other approaches which would entail

targeting students would be used. It is not obvious to me that, even in the lower poverty schools, the rigidities of the supplement-not-supplant requirements are the only way of ensuring that the purposes of Chapter 1 are met.

25. See Kennedy et al. (1986) for a discussion of the poverty-achievement relationship. See Purkey and Smith (1986) and Good and Brophy (1986) for discussions of the importance of school-based approaches. See Peterson (1986) for a discussion of the importance of higher order and critical thinking skills and their absence from the Chapter 1 curriculum. The figure $500 is not arbitrary; it is approximately what is spent in Chapter 1 programs on each Chapter 1 child. The 40 percent poverty figure is not unusually high for most inner-city and poor rural area schools.

26. Local education agencies are urged to use the results of the evaluations to help improve their Chapter 1 programs, but again they are not held accountable for a failure either to perform well or to engage in active improvement.

27. A very important consideration here would be to ensure that local schools and LEAs did not choose too narrow a set of achievement measures and that at least the forms of the measures changed from year to year so that the teachers did not focus on instruction designed solely to improve student scores on a particular test. In my view the schools and LEAs should be accountable for outcome results at one time during the elementary years, the end of fifth grade. For students to do well on most standardized tests at the end of fifth grade in reading and mathematics, they need a firm and fairly broad grounding in basic and problem solving skills. They need to be able to read and comprehend text beyond simple sentences and paragraphs, to gather information in context areas from textbooks while working alone, to draw and make inferences from text, to carry out the basic arithmetic operations and to solve word problems in mathematics that require selecting and accurately using the right arithmetic operation. The LEAs should and generally do require lots of other tests at earlier grade levels to monitor progress. At the middle and secondary levels similar kinds of standards could be defined.

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PART III: PROGRAM AND STAFFING STRUCTURES

SUMMER PROGRAMS AND COMPENSATORY EDUCATION: THE FUTURE OF AN IDEA

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SUMMER PROGRAMS AND COMPENSATORY EDUCATION: THE FUTURE OF AN IDEA

Summer schools have been a strategy of educational remediation, reform, and enrichment for over a century and a half. The traditional school calendar was shaped by the rhythms of an agrarian society; schools opened after harvest and closed in time for spring planting. By the mid-nineteenth century, however, a school year based solely on agriculture seemed archaic. Urban areas, crowded with immigrants and refugees from rural areas both here and abroad, were under some pressure to keep children and youth occupied year-round. School began offering recreation programs, language training, and a host of special programs during the summer. In 1841, according to a government study, many cities including Baltimore, Buffalo, Cincinnati, Detroit, New York, Philadelphia, and Washington were operating on an eleven-month year (Dougherty, 1981).

Interest in the potential of summer school programs seems to be episodic. In times or places in which schools are overcrowded, or teachers scarce, a "fourth quarter" or an "extended year" are proposed as solutions (Anderson, 1972; Maynard, 1952; Miller, 1965; Rice, 1970; Richmond & Riegel, 1974). When increased heating costs and utility bills threaten to dominate educational budgets, the summer is presented as a more cost-effective season for schooling than the winter (Barnette, 1978). Summer is typically viewed as both an opportunity to remedy the deficiencies of regular schooling and a time to augment, enhance, accelerate, or enrich regular programs, for both individual students and schools. Hence, advocates of summer programs stress the potential gains for children who are falling behind as well as the benefits for those eager to move ahead.

The popularity and the curricular thrust of summer programs seem to mirror the mood in education generally, and to be responsive to the allocation of Federal funds. The passage of the Elementary and Secondary Education Act in 1965 stimulated many new summer programs (Nolte, 1966). Programs have focused on students lacking basic skills or English language competency, as well as special programs in math, science, and foreign languages (Scola, 1970; Shane & Nelson, 1974). Many, perhaps most, summer programs are targeted to particular groups; the groups include, but are not limited to low achievers; bilingual migrants; students making up failing grades in required courses; students interested in art, computers, or some other subject neglected in the regular program; handicapped students; and students judged to need compensatory education or remedial work.

A review of summer programs should ideally address the questions of what, why, where, how, and with what effort. Unfortunately, it is not possible to construct a meaningful taxonomy of summer programs on any of these dimensions. Descriptive accounts suggest that programs are at least as diverse as those found in regular nine-month programs, in terms of purpose, size, content, duration, and materials covered. Systematic accounts of the diversity, however, do not exist. The only large scale study of summer programs based on a nationally representative sample of schools was conducted in 1976; consequently, there are no recent data and no information on national trends over time. This is particularly regrettable in recent years. With large numbers of mothers employed full-time, one might expect an increase in parental demand. Alternatively, in times of retrenchment and conservative fiscal policy, summer schools may come to be viewed as an unnecessary luxury or a frill. Faced with such conflicting needs, it is not clear whether schools have expanded or curtailed programs.

The Sustaining Effects Study (SES) represents the only effort to scrutinize summer programs on a national scale (Carter, 1984; Klibanoff & Haggart, 1981); consequently, general information about availability, program content, enrollment, or the effects of summer programs must be gleaned from the dozen or more reports generated by this study. The Sustaining Effects Study collected data from 5,010 elementary school principals regarding the programs, policies and students in their schools in 1975-76, in order to select samples for further study as well as to establish national projections. The 15-item principal survey had an exceptionally high response rate, exceeding 99 percent. Summer school programs were available in over half (51 percent) of these schools. As one might expect, the single largest correlate of the availability of programs was size. Sixty-two percent of the elementary schools enrolling over 400 students offered summer programs, while only 46 percent of those with enrollments of 400 or less had programs available (Hoepfner, Wellisch, & Zagorski, 1977). There seems to be only a slight relationship between poverty and the availability of summer programs; however, schools with a concentration of minority students have more programs. In general, it seems both the least and the most advantaged students have a higher chance of attending summer school, although the differences are not great. These data are given in Table III-1.

The availability of programs does not, of course, tell us what kinds of programs were offered or who attended. In over half of the schools surveyed (52.1 percent), summer programs were entirely compensatory in nature; an additional third of the school (35.1 percent) offered regular or enriched programs as well. Only 12.8 percent of the summer programs offered only regular or enriched instruction (Hoepfner et al., 1977). The

Table III-1

Summer School Availability by School Characteristics, Sustaining Effects Study, Grades 1-6
1975-76

Percentage Minority Students	SUMMER SCHOOL AVAILABLE
0-19%	48.7
20-49%	56.2
50-79%	50.5
80-100%	60.2
Percentage Poverty Students	
0-20%	55.7
21-50%	44.3
51-100%	49.2
Percentage of Students Reading Below Grade Level	
0-20%	54.0
21-50%	46.4
51-100%	52.8
Compensatory Programs Funding Sources	
Title I ONLY	46.7
Title I and other	46.5
Other funds ONLY	59.9
No special funds	60.4

Source: Hoepfner et al. (1977): Tables VII-44; VII-48; VII-49; VII-50.

salience of compensatory education in summer schools is also evident in the reported sources of funds as well. Among the 52 schools studies in detail by the SES, 50 percent received Federal funds for summer programs; 44 percent was from Title I. Only 35 percent of the schools received no compensatory education funds. Seventy-nine percent of these schools offered instruction in remedial reading; 62 percent provided remedial math (Klibanoff & Haggart, 1981).

Although a slight majority of the schools surveyed (51 percent) reported that summer programs were available, the majority of these programs were offered by a nearby school or in a district center; only 35.1 percent were actually located in the surveyed school. These figures imply that less than one elementary school in five actually offered a summer program. In both the SES study and in Atlanta, attendance probabilities were considerably higher when the programs were located in the school normally attended by the student (Klibanoff & Haggart, 1981; Heyns, 1978). Although precise attendance data is lacking, overall it appears that roughly 8 percent of all elementary students attended summer school in 1976, and that the majority of these (73 percent) attended the program in their own school (Hoepfner et al., 1977).

The effectiveness of these summer programs is the critical question for policy analysts and researchers. Since the SES data provide such a rich resource, it deserves special attention. Before presenting the findings on program effectiveness, however, it is worth reviewing the sources of national data on summer programs.

The Dearth of National Data

The single most striking fact about summer programs in the United States is how little is known about them. Whether one seeks data on enrollment trends, the size or distribution of programs by region; or information on the structure, content, costs, and policies pursued, no Federal agency collects or disseminates systematic records. The Common Core of Data (CCD) Survey administered by the National Center for Education Statistics makes no inquiry regarding the availability, the staffing, or the enrollment of summer programs. Although there may be a few states or local educational agencies (LEAs) that collect systematic information, there are surely many that do not. Moreover, there are no consistent definitions of program content. There is an enormous diversity in types of programs; the size, duration, educational goals, and target populations are quite varied. Neither the delivery system nor the services are uniform across schools. Thus, even if the National Center for Education Statistics were to include appropriate questions in their annual surveys, these data would be suspect.

The budget and staffing for summer programs are typically handled at the school or district level. Reimbursements from state and Federal sources tend to be small, and seldom, if ever, are the full costs of programs covered. Some states will subsidize required courses in high schools or particular compensatory programs; however, it appears that the majority of summer programs are largely self-supporting; tuition is paid by the students or their parents (Dougherty, 1981).

A wide range of summer staffing patterns is also prevalent. Regular teachers are typically given an opportunity to apply, but salaries are not fixed by contract, nor subject to collective bargaining agreements. Some schools rely on student teachers, on parents or other non-credentialed aides, or even on volunteers to staff summer programs. Since programs must typically pay for themselves, a common pattern seems to be hiring staff contingent on fees paid at enrollment; in practice, this means that commitments for summer employment can be made only after classes have begun. Roughly 10 percent of all teachers reported summer employment in a school system in 1981 (National Education Association, 1982); however, this figure includes inservice training and course development, as well as actual summer teaching. Since many schools employ special summer staff, 10 percent is likely to be an underestimate of the number of teachers and classes operating in the summer.

Without centralized budgetary or staffing provisions, state and district policies toward attendance in summer school appear highly various if not erratic. Indeed, since there are few incentives or subsidies based on average daily attendance, and since programs are generally construed as voluntary, many summer programs do not even take roll on a daily basis.

Summer programs in general, are less subject to the educational regulations and guidelines established by districts, state agencies, or Federal programs; accountability for the content of programs, for attendance levels or for student outcomes is virtually non-existent. Even if one wished to accomplish only the modest goals of counting students or classifying programs nationally, it could not be done. Moreover, given the highly decentralized nature of the programs and the lack of systematic record keeping, adding several items to a survey of SEAs or LEAs would not be an adequate solution. While New York City and State may not be typical, efforts to discover how many students attended summer school in 1985 in either the state or the district generated considerable hilarity among informants.

The primary reason that data on summer programs are so difficult to obtain is that there are no national guidelines for data collection, nor any Federal agency that attempts to monitor programs. To be sure, there are a number of Federal programs which fund summer schools; in fact, it is likely that more Federal dollars are spent per student enrolled in summer education than in regular school. However, summer schools tend to be and to be seen as peripheral to the primary mission of these programs. Four programs, in particular, deserve some attention in this regard: Head Start, Chapter 1 Regular, Chapter 1 Migrant, and Programs for the Handicapped.

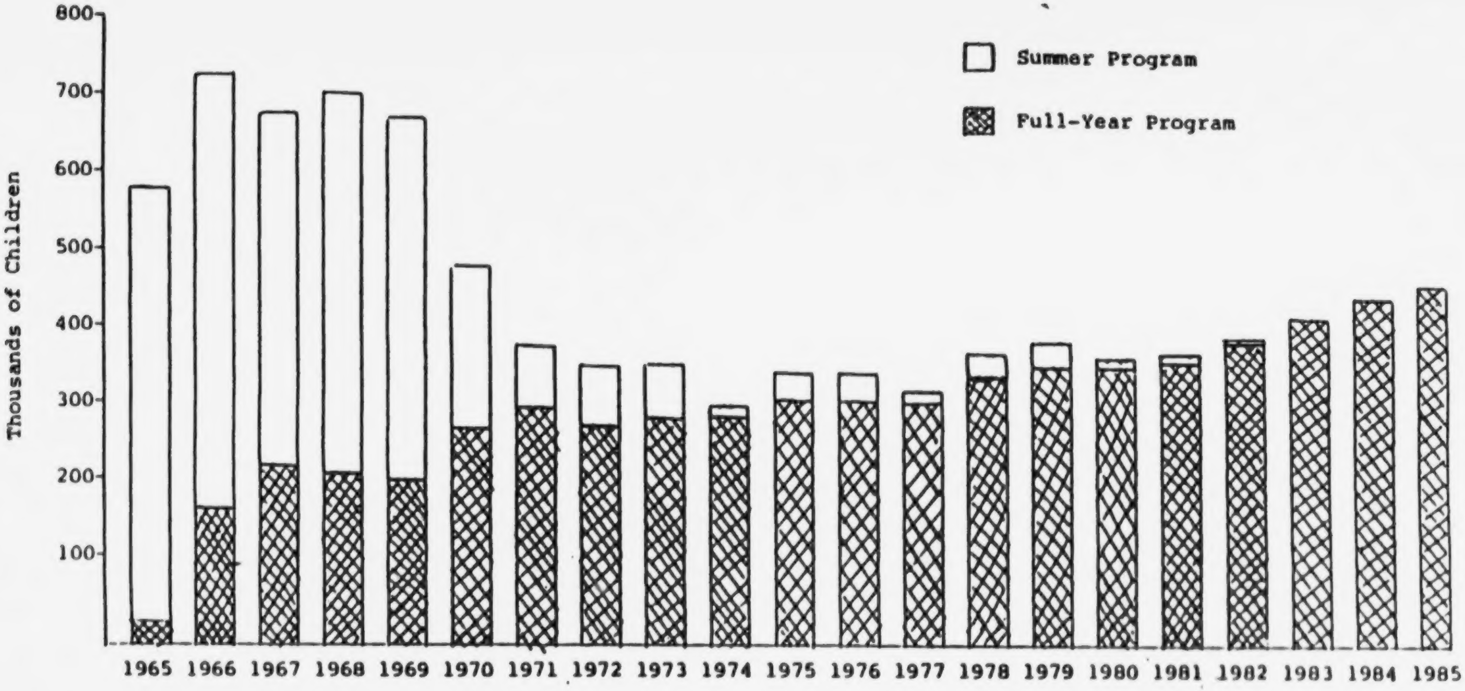
Head Start

Despite criticism, controversy, and several concerted attempts to reduce funding, Head Start survives as a major Federal program, with a budget in excess of a billion dollars. The original design for Head Start was, it should be remembered, as a six week summer program for pre-school children. In 1965, Head Start summer programs enrolled over half a million children, while the full-year programs involved fewer than 50,000. During the first five years, full-year programs expanded dramatically, while summer programs shrank in size. Since the early 1970s, full-year programs have grown steadily, gradually replacing summer Head Start entirely. In 1982, funding for all summer Head Start programs was discontinued; since that time, no data are available on pre-primary summer programs. Figure III-1 summarizes the enrollment data, by year and type of program, for the last two decades.

No one seems quite certain why summer Head Start programs were discontinued. Early evaluations demonstrated that full-year Head Start had more positive effects than the summer programs (Smith & Bissell, 1970); however, the cognitive benefits of Head Start, whether based on the summer or the school year, have never been the most compelling reason for continued support. Perhaps the continuity provided by year-round staff and students influenced the shift. Perhaps parental demand was the major factor. In any event, there are no longer any federally funded summer Head Start programs; consequently, there are no recent data on either enrollments or effects.

Chapter 1 Regular

Even before the Educational Consolidation and Improvement Act of 1981 was approved by Congress, Title I as it was then called, had ceased to collect data on summer compensatory programs. The last year in which enrollments were tabulated separately for the summer and the school year was 1979-80. In that year, 314,000 students were enrolled in summer compensatory education, approximately 15 percent of the total students served. The current Chapter 1 reporting guidelines require enrollment breakdowns for the "regular term," by grade, race, gender, age of child, and whether enrolled in a public or nonpublic school. Staff and services for the summer are not counted separately; nor is there information on how many school or summer services represent duplicate counts. Most children receive several different kinds of non-instructional or support services simultaneously, such as transportation, medical or dental exams, and counseling; how, when and to whom they are allocated is not clear. There is some evidence that Title I funds for summer compensatory education were channeled to support existing programs in several relatively disadvantaged



Source: J. B. Richmond, D. J. Stipek, & E. Zigler. (1979). A decade of Head Start. In E. Ziger & J. Valentine (Eds.), Project Head Start: A legacy of the war on poverty. New York: The Free Press.

F. Beamer, Head Start Bureau, Administration for Children, Youth, and Families, U.S. Department of Health and Human Services. Personal communication. May 16, 1986.

Figure III-1. Number of Children Served in Head Start Summer and Full-Year Programs

districts. However, we do not now know whether Chapter 1 funds continue to be used in this way, whether those summer programs have been cut back, or to what extent schools provide summer remediation to any extent.

Major policy reforms in the early 1980s substantially reduced both the paper work and the accountability of Chapter 1 programs. Uniform evaluation measures, such as the Title I Evaluation and Reporting System (TIERS), are no longer required in order to receive funding. Chapter 1 does specify that "the local education agency will keep such records and provide such information as may be required for fiscal audit and program evaluation." Both the local and the state education agencies must assure that programs "...be evaluated in terms of their effectiveness...and that such evaluation shall include objective measurements of education achievement in basic skills and determination of whether improved performance is sustained over a period of more than one year" (Plato, 1985). In 1983, the technical amendments further specified that each state agency should conduct an evaluation of the programs assisted under this chapter "at least every two years and shall make public the results."

These requirements are quite minimal; specific models and evaluation designs are left to the state and local level. Under such regulations it is possible that no two states will ever conduct or publish comparable evaluations. It is likely that most states will never evaluate summer programs, even to the extent of collecting descriptive data or enrollment trends. Although the "New Federalism" has cut down on paper work, it is important to ask whether sufficient data remain that are relevant to the effects of compensatory education and that can be aggregated across states. With respect to summer programs, it is clear that we know next to nothing about the distribution or effects of compensatory education.

Chapter 1 Migrant Education

Extensive educational services are provided to the children of migrant laborers through funds authorized by ECIA Chapter 1 Migrant (P.L. 97-35). Over 2,000 districts, in 47 states operate programs for migrant education; the Federal government currently spends about 264 million dollars annually in support of these programs, which involve over 600,000 children each year (Plato, 1984). In 1982, 34 states offered summer programs in addition to, or instead of, school year programs; three states have year-round migrant programs.

State educational agencies are responsible for monitoring, evaluating, and reporting programs in migrant education. Although the State Performance Reports for Chapter 1 Migrant involve detailed data, reports are not uniform across states.

State Performance Reports for Chapter 1 Regular and for Chapter 1 Migrant differ in key respects. In particular, the reports for migrant programs specify unduplicated counts for regular year and summer programs separately by grade level; instructional and support services, as well as staff data, are tabulated as unduplicated reports separately by term as well. Chapter 1 Regular collects no data on summer programs at all; categories of support services represent duplicated counts in Chapter 1 Regular, and hence cannot be compared across participants (Plato, 1985). It would seem that much better data exists on summer school attendance for migrant children than for children participating in compensatory education generally. Ironically, summer programs, which originated as a solution for idleness and potential mischief among urban children, are carefully monitored only when provided to the children of migrant farm laborers.

Despite the more elaborate performance reports, national data on summer programs for migrants are difficult to assemble. State policies regarding data collection and program evaluation differ widely; there have been few efforts to aggregate state-level data. Plato (1984) estimated that 225,752 children were served in 1981-82, in regular school year reading programs in 42 states. Approximately 11,000 students received summer reading instruction and 14,659 enrolled in summer math programs in nine states. (These states were Alabama, Arizona, Illinois, Michigan, Ohio, Oregon, Tennessee, Washington, and Wisconsin.) For the nine states reporting basic skills instruction in the summer, summer enrollments were 58 percent and 118 percent of regular term enrollments in reading and math, respectively. In Washington, state programs serve approximately half the eligible migrant population. Summer programs average between 17 to 30 percent of the children served during the regular term.

Performance reports require evaluation of both Chapter 1 Regular and Chapter 1 Migrant every two years (Plato, 1985). However, no models are specified and information on the type or duration of services is not collected. State policies regarding data collection and program evaluation differ widely; although a number of states still use the Title I evaluation models (TIERS), aggregating such evaluations can be highly misleading. Although data on summer programs for migrants are available at the state level, it is not clear that the state programs are comparable. It is clear that comparisons between Chapter 1 Regular and Chapter 1 Migrant cannot be made (Plato, 1985).

Education for the Handicapped

A recent impetus for summer programs has come from an unexpected direction. In Armstrong v. Kline, the U.S. District

Court for Eastern Pennsylvania held in a class action suit that the traditional 180 day school year did not constitute a free and appropriate education pursuant to the provisions of P.L. 94-142. The Court ruled that the State Department of Education and local school districts are required to provide an extended year program for handicapped children if "the interruption in educational programming causes a regression that, together with the student's limited recoupment capacity, render it impossible or unlikely that the student will attain the level of self-sufficiency and independence from caretakers that the student would otherwise be expected to reach" (Remedial Order #2; Published subsequent to Armstrong v. Kline (1979); cited by Helmich, 1982).

This decision, which was upheld by U.S. Third Circuit Court of Appeals (Battle v. Commonwealth, 1980) has a number of ramifications for school programming (Stotland & Mancuso, 1981). It has been cited in similar cases in New Hampshire, Georgia, Oregon, Michigan, and Wisconsin. In these cases, the courts have struck down state codes or provisions that precluded free extended year programs, on the grounds that an explicit prohibition of such programs was a violation of P.L. 94-142. In effect, the courts have held that year-round schooling may be a necessary component of the "free, appropriate public education" mandated by Federal statute for handicapped children. While the courts have ruled that summer programs, when needed, should be free, they have been less willing to dictate the creation of such programs or to specify the amount of "summer regression" that called for an educational remedy. In particular cases, the courts have not been persuaded that an absence of summer school constituted a substantial threat of irreparable or non-recoverable injury, which was the criteria in Armstrong v. Kline. In Michigan, the courts ruled that if a child's individualized educational plan (IEP) included special educational services in the summer, the fact that programs were not offered did not remove the burden of responsibility from the schools for providing them (Birmingham and Lamphere School Districts v. Superintendent of Instruction for the State of Michigan, 1982).

It is not clear what, if any, effect these decisions have had on the provision or operation of summer schools generally. In Pennsylvania, during the first summer after Armstrong v. Kline, over 2,000 children enrolled in summer school programs at a cost of 2.6 million dollars (Larsen, Goodman, & Glean, 1981). In Illinois, which has not as yet experienced litigaion on summer school issues, 26 due process hearing decisions involving summer services were appealed to the State Superintendent in 1981 (Helmich, 1982). The legal opinion written at that time by the Legal Advisor to the Illinois State Board of Education, although equivocal about eligibility or procedural requirements, emphasized that if the IEP directs provision of summer school services, an extended year should be available at no cost to parents. In Illinois, the number of districts submitting applications for summer school nearly doubled between 1979 and 1981, from 366 to 667 (Helmich, 1982).

At present, the courts seem to have concurred that summer loss or regression is typical, and may necessitate extended year programs. A statute or a school code limiting educational responsibilities to 180 days a year or to any other arbitrary period of time is, hence, incompatible with P.L. 94-142; such statutes cannot, therefore, be used to avoid the costs or responsibilities of summer programs for the handicapped. Moreover, if summer programs are available to handicapped students, denying them to non-handicapped students is probably a violation of equal opportunity (Leonard, 1981). Only one case, involving the Georgia Association for Retarded Citizens v. Dr. Charles McDaniel, has been appealed to the Supreme Court, and the Court has decided not to hear it (Lehr & Haubrich, 1986). However, given the importance of the issues and the potential costs entailed in providing services, it seems likely that further judicial opinions will be forthcoming.

The literature on summer programs for the handicapped is largely descriptive; there have been a handful of small-scale evaluations, but no experimental studies. Edgar, Spence, and Kenowitz (1977) and Helmich (1982) report fairly extensive research reviews and conclude that there is little evidence to support long-range benefits of summer programs. The bulk of the studies do report a summer drop-off, at least on standardized skills, but this seems to exist independently of program participation.

The objectives of summer programs for the handicapped tend to vary considerably. Even when skill acquisition has priority, it is not clear that gains in reading Braille, overcoming hearing impairments, or developing coordination can be evaluated with a common metric. Reviewing descriptive program accounts leaves the clear impression that summer programs for the handicapped, like summer schooling generally, are designed to do everything school does, much of what school cannot do, and, in addition, be fun. While it is difficult to fault programs promising camping, cultural enrichment, enhanced self-esteem, social development, and remedial learning, the diversity of goals defies comparisons, if not evaluation altogether.

Given the diversity of programs, and the disinterest on the part of Federal agencies in promulgating guidelines for data collection or evaluation, it is surprising that anything can be said about program effectiveness. Research on summer programs tends to be scattered and largely descriptive;

systematic evaluations, which are few in number, offer little if any evidence that such programs might yield impressive cognitive gains for participants. Despite this discouraging assessment, I will argue that we stand to learn more about intellectual development and cognitive growth by studying summer learning than by any other means.

Literature Review

Early studies of summer learning focused on patterns of retention, rather than growth. Issues such as the most effective curriculum for fall review (Cook, 1942, 1952) or whether the material children forgot was specific to particular subject matter dominated the field. The majority of studies found that reading, vocabulary, and language skills change little if at all during the summer, while math and spelling tend to decline (Beggs & Hieronymus, 1968; Brueckner & Distad, 1924; Elder, 1927; Garfinkle, 1919; Irmina, 1928; Keys & Lawson, 1937; Kolberg, 1934; Morgan, 1929; Morrison, 1924; North, 1955; Nelson, 1929; Parsley & Powell, 1962; Patterson & Rensselaer, 1925; Schrepel & Laslett, 1936; Soar & Soar, 1969; Sterrett & Davis, 1954). Certain skills, however, have been found to improve, such as handwriting (Nelson, 1929) and nature study (Bruene, 1928), although one cannot ignore the fact that these skills may improve with maturation or practice, rather than instruction. Skills taught through drill, or subjects that require specific facts and information tend to show greater summer loss. A number of analysts have believed that highly motivated students, capable of autonomous learning do better in the summer months (Soar & Soar, 1969). Intelligent students generally show higher levels of retention than those less gifted (Bruene, 1928; Cook, 1942; Schrepel & Laslett, 1936).

By contemporary standards, these studies are neither convincing nor conclusive. Without exception, the samples are small and unrepresentative; control groups are rarely present; family conditions, socioeconomic factors and summer activities are unmeasured. The tests used by the authors are, as one might suspect, idiosyncratic and generally not normed for any standard population.

Recent studies of summer learning have focused on two sorts of questions. First, to what extent do the patterns of summer learning differ for children from different backgrounds; and, secondly, how do compensatory summer programs influence outcomes. Hayes and Grether (1969) and Hayes and King (1974) compared summer learning rates in Black and Puerto Rican schools with those in all-White schools. Irrespective of grade, reading scores in the minority schools consistently lagged behind those observed in all-White schools. As Hayes and Grether (1969, p. 7) report, "upward of 80 percent of the difference between the economically advantaged all-White schools and the all-Black and Puerto Rican schools" could be accounted for by differential summer programs.

Murnane (1975) collected longitudinal achievement data on second and third graders in New Haven for two years. He found that White children consistently did better than either Black or Spanish-speaking children, although summer loss was true for all children irrespective of race.

Pelavin and David (1977) and David and Pelavin (1978) studied four compensatory education programs using longitudinal data. Again, they found substantial loss among compensatory education students on the Gates-MacGinitie Reading Test for students in grades three through eight during the summer months. These reports found their largest audience in the evaluation community; the conclusion that seems to have had the most impact is that Title I evaluations should be based on 12-month data, rather than the school year alone. Later evaluations of compensatory programs, such as the Sustaining Effects Study, were concerned to show that summer loss did not vitiate positive findings from 9-month studies. The question of how much learning occurs, or whether the patterning of gains is meaningful, seems to have been lost.

Hammond and Frechtling (1979) studied reading and math achievement in 400 first- and third-grade classrooms as part of the Instructional Dimensions Study (IDS). In all cases, the school year gains of compensatory education students exceeded that of the non-compensatory education students, while the summer gains showed the reverse trend. During the spring to fall interval, that is the summer, the first- and third-grade compensatory education students fell behind their classmates in both reading and math. Hammond and Frechtling do not find, however, that summer school programs have much impact on this trend.

The only study to date that has looked at summer learning patterns without the lens of compensatory education is Heyns (1978). Longitudinal data for fifth-, sixth-, and seventh-grade students was collected in 42 Atlanta schools. The purpose of this study was to assess the degree to which longitudinal learning patterns might provide a more precise assessment of the effects of schools than could be made with existing data on patterns between schools. The purpose was to use summer as a temporal control for schooling; since children are influenced by families and peers year-round, the purpose was to use summer as a quasi-experimental control for "schooling," to measure, in effect, "non-schooling."

These data strongly support the existence of differential summer learning. During the summer, the majority of children learn less rapidly than during the school year. Moreover, during the summer socioeconomic and racial inequality increases dramatically. Summer schools do not, it should be stressed, remedy the situation; however, the summer programs in Atlanta were not, in general, intended to promote growth. These programs were short, voluntary, and devoted to fun as much as to educational compensation.

These studies, insofar as substantive generalizations are possible, tend to agree to a remarkable degree. Major problems for the analyst remain; the next section reviews the conceptual and methodological difficulties in assessing summer programs.

Evaluating Summer Losses

There are recurring dilemmas in assessing summer programs, compensatory or otherwise, that seem intractable both conceptually and methodologically. The problems afflict virtually all of the research in this area; moreover, they obviate the likelihood of conducting a synthesis or meta-analysis of findings.

As we have seen, researchers have studied a number of distinct issues regarding summer learning. Although the issues are related conceptually, they invite quite different analytic strategies and conclusions. First, the problem has frequently been defined as retention, rather than cognitive growth; consequently, analysts have been concerned with the magnitude or the distribution of summer loss. Secondly, the retention issue is rarely defined as a comparison between rates of cognitive growth in the school year and the summer, or as relative learning in a temporal framework. Few analysts have looked at cognitive growth as a temporal phenomenon, at all; we do not have reasonable models for growth, short of expecting linear rates year-round. The logic of seasonal growth patterns leads directly to the question of whether children learn more or less during fixed periods of time, and whether one can analyze growth as a cumulative process. These questions are problematic for all evaluation studies. Summer programs insofar as they have been evaluated, are typically viewed as an educational treatment in an experimental or quasi-experimental framework; hence, the primary question is whether participants fare better than non-participants. Third, but only recently, the summer months have been examined as a time in which relative gains and losses mattered; therefore, researchers have been concerned with comparing the patterning of test scores for high or low achievers, for White or minority students, or for children from more or less advantaged families.

Each of these conceptual perspectives invites conclusions that depend on untested methodological assumptions. First, to my knowledge, there has never been a psychology of cognitive forgetting; one must assume that the de-learning process is somehow the reverse of learning. Second, although there has been substantial progress in comparisons across studies, we still do not have a certain method of comparing gains or losses on different test instruments. And finally, once one embarks on a longitudinal evaluation of relative progress, one immediately wonders whether the metrics of achievement assigned to tests can support the assumptions one wishes to make. I have written extensively about these problems (Heyns, 1978, 1980); they still seem quite intractable and particularly so for studies that wish to assess relative summer growth or to evaluate summer programs. An insignificant gain (or loss) is only meaningful in the context of how much gain (or loss) should be expected in a specific time period. A small gain, even when not significantly different from zero can be more actual learning month-by-month than a significant gain for a longer period of time. When true experimental data cannot be collected, the issue of norms or expected gains becomes far more important for conclusions.

The varying conceptual models that underlie assessments of summer growth have analytic implications as well (Deck & Arter, 1981). Summer loss, particularly among disadvantaged populations or children who are eligible or enrolled in compensatory education, may cast doubt on the "real" effectiveness of school year programs, even though slower summer growth may be quite general. Evaluation designs that include a pretest/posttest framework do not typically involve a correction factor for program duration; short-term intensive programs tend to be evaluated with the same statistical expectations as programs with a longer frame of reference. Insofar as regression effects seem ubiquitous in educational research, it is quite difficult to compare the rates of learning for children who fall on different parts of the achievement distribution. Disentangling summer gains or losses by comparing the performance of low- or high-achieving students is, to say the least, complex.

In practice, these issues have cropped up in virtually every longitudinal study of summer learning that has been done. The conclusions reached by analysts are, typically, equivocal about one or more of the outcomes. Without exception, the studies have relied on test scores and data collection procedures that were designed for studying school learning. Moreover, diametrically opposed conclusions can be drawn from exactly the same data, depending on the conceptual and methodological assumptions. To illustrate, let us review the findings and conclusions written by or attributed to the single most comprehensive study of summer learning yet undertaken, the Sustaining Effects Study.

Sustaining Effects Study

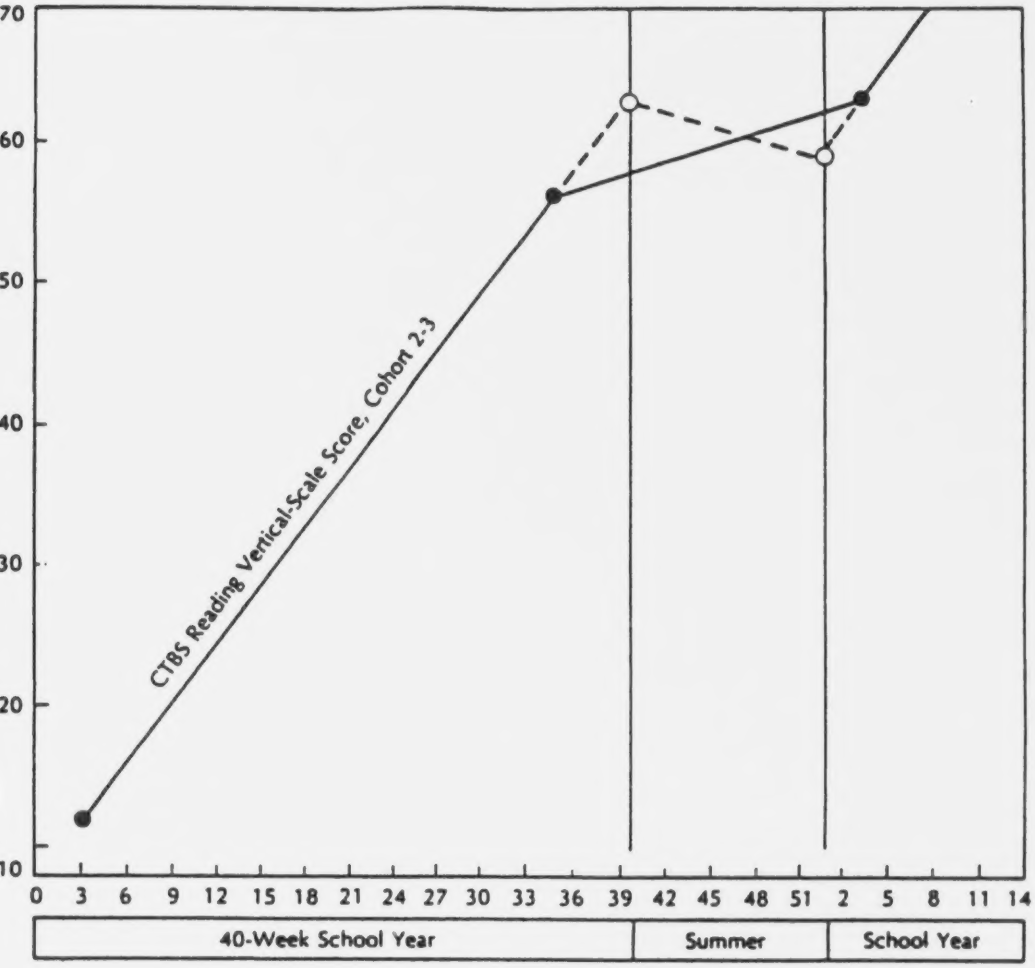
The only national study of summer learning that has been conducted, and by far the largest single study, is the Sustaining Effects Study (SES). Begun in 1975, the SES collected longitudinal data for three successive school years on over 100,000 students in some 300 elementary schools throughout the country. Among the fifteen volumes published by the primary contractor, the System Development Corporation of Santa Monica, California, one entire report was devoted to summer growth (Klibanoff & Haggart, 1981).

The primary questions posed by the SES concern the allocation, costs, effects, and the sustained effects of compensatory education among elementary school students. Academic achievement in reading and math was assessed by the Comprehensive Test of Basic Skills, although a small number of particular items were eliminated because they were judged culturally or racially biased (Hemenway et al., 1978). Vertical scale scores were developed for these tests, by projecting national test score distributions from the first year of the study. The testing schedule, was established as the third and fourth week of classes in the fall and about five weeks before classes ended in the spring, and apparently most schools conformed to this schedule (Klibanoff & Haggart, 1981).

The first major finding of this study was that no absolute summer loss existed for students in the summer. Reading gains exceeded math gains, and there seems to be a possibility that math losses occur at the higher grades (Carter, 1984; Klibanoff & Haggart, 1981).

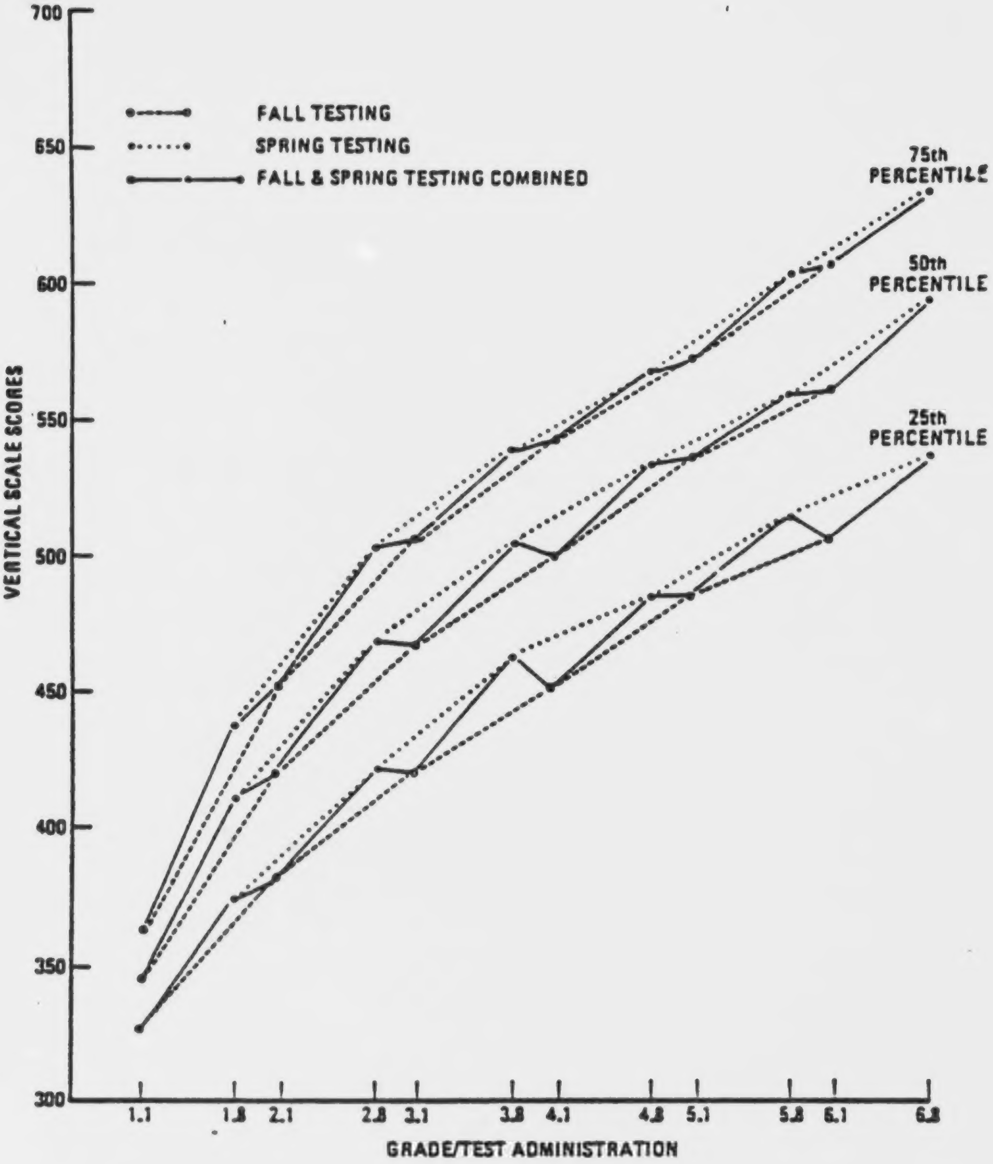
This finding is entirely due to the adjustments made for the testing schedule. As Klibanoff and Haggart (1981) demonstrate, an absolute drop-off occurs if one extrapolates learning rates to the end of the school year or to the beginning of the fall (see Figure III-2). They admit that the testing procedures may err in favor of finding positive growth during the summer, since eight or nine weeks of regular schooling are included in the period defined as the summer for their model. If one looks at the actual test scores, however, a considerably different picture emerges (see Figures III-3 and III-4).

In terms of relative gains or losses, the standardized achievement scores presented by Carter suggest that Title I students in grades one through four, lose relative ground during the summer each and every year (Carter, 1984), although this is not mentioned directly. The only students with any gains during the summer are those not enrolled in Title I, the regular or non-compensatory education students. Neither Klibanoff and Haggart (1981) nor Carter (1984) claim that



Source: Klibanoff and Haggart (1981), Figure 1-1, p.6.

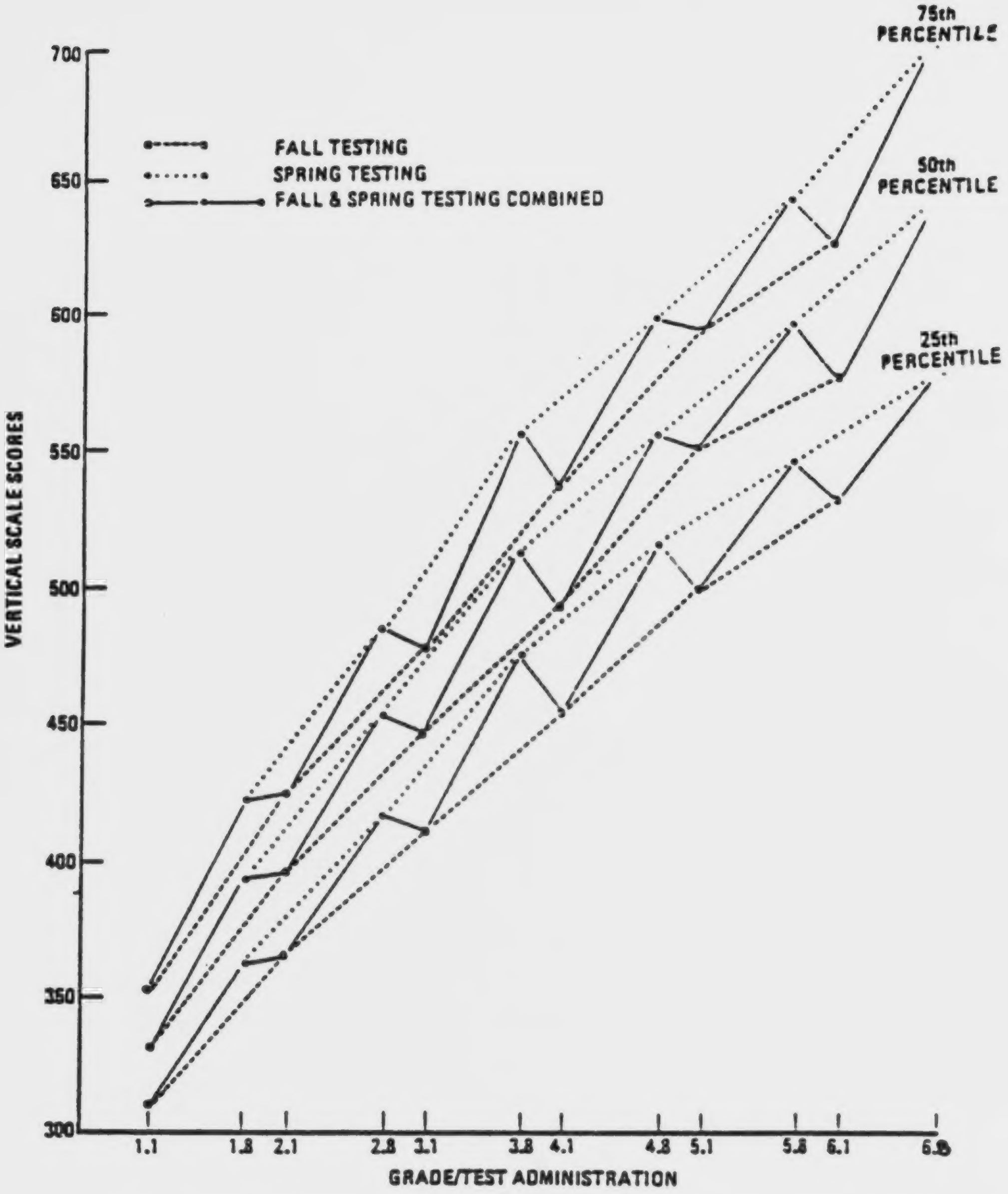
Figure III-2. Scaling Issues in the Sustaining Effects Study of Achievement Growth During the Summer



The spring-to-fall differences are always associated with cross-sectional changes in samples and are frequently also associated with differences in test levels. Negative "growth", when it occurs, may be attributed to sample differences and test-level differences. When raw scores are compared for the same test levels, the differences are either positive or small when negative. Therefore, the zig-zag nature of the curves above should not be carelessly attributed to "summer drop-off."

Source: Hemenway et al. (1978), Figure 1-1, p. 29.

Figure III-3. Vertical Scale Scores as a Function of Grade Level by Quartiles for the Debiased CTBS Reading Test



The spring-to-fall differences are always associated with cross-sectional changes in samples and are frequently also associated with differences in test levels. Negative "growth," when it occurs, may be attributed to sample differences and test-level differences. When raw scores are compared for the same test levels, the differences are either positive or small when negative. Therefore, the zig-zag nature of the curves above should not be carelessly attributed to "summer drop-off."

Source: Hemenway et al. (1978), Figure 1-2, p. 30.

Figure III-4. Vertical Scale Scores as a Function of Grade Level by Quartiles for the Debiased CTBS Math Test

students learn as rapidly in the summer as the school year; their data show a pronounced slow-down during the summer months for everyone. Carter describes the summer reading gains as "large" (p. 8), while Klibanoff and Haggart (1981) note that compensatory education students "tend to make smaller gains over the summer than do non-compensatory education students" (p. 31). Yet their primary goal is showing that an absolute loss does not occur.

A second major finding is that summer programs are not related to summer growth; compensatory education students attending summer school do not show greater growth than those not attending. Hence, the evidence does not "provide much, if any, support for the effectiveness or cost-effectiveness of summer school" (p. 21). This conclusion, which is doubtless true, follows analyses that demonstrate repeatedly that very small or negligible gains are made during the summer months for any cohort. The authors note that summer programs are short, and "are not particularly intensive treatments" (p. 84); although compensatory education students are more likely to enroll, and to receive disproportionate resources, they do not seem effective. The fact that gains are trivial during the summer, whether or not students attend summer school, becomes prima facie evidence for the ineffectiveness of summer programs.

The Sustaining Effects Study did not apparently explore regression effects very seriously. Carter (1984) concludes that "high gainers tend to lose over the summer, whereas low gainers tend to gain" (p. 8). Klibanoff and Haggart (1981) also report an inverse relationship between summer changes and those in the preceding school year; this is interpreted as an artifact of regression when applied to students in high-gaining programs during the school year who showed greater losses (p. 46) or when the incidence of summer losses in mathematics is concentrated among high achievers (p. 41). There is less mention of regression artifacts when considering the gains of compensatory education students, in either the school year or the summer.

Any analysis of longitudinal change involves measurement error and regression effects. The major unresolved problem from a statistical point of view is that there are few models suggesting how or why test-score reliability should vary across time. One might expect greater reliability and less measurement error when comparing a pretest and a posttest separated by only three months. Alternatively perhaps, differences in test administration between the fall and the spring are sufficiently great to wash out differences due to growth. The models developed for Atlanta (Heyns, 1980) imply that within parallel batteries, reliability tends to increase over time. (Klibanoff and Haggart also show that for non-compensatory education programs the portion of the variance explained by the pretest increases over time for successive cohorts.) However, this could be explained as "practice effects," as "scale effects," or as declining errors of measurement (Heyns, 1980).

The major important finding from the SES, unlike those discussed above, seems to have escaped the various summaries. Consistently, Klibanoff and Haggart (1981) show greater summer losses for compensatory education students than for non-compensatory education students. Among Title I students as well, when children are classified by achievement level, by minority status, or by participation in nutrition programs (a proxy for family economic status), "disadvantaged students tend to grow at a slightly slower rate over the summer than do their non-disadvantaged peers" (p.47). While the authors reiterate that "summer-loss is not as prevalent a phenomenon as policy makers had feared," their evidence clearly points to a consistent relative loss among the least advantaged children. This finding confirms the conclusions and analyses of Summer Learning and the Effects of Schooling (Heyns, 1978) to a remarkable extent. Although the Sustaining Effects Study necessarily focused on Title I programs, the patterning of gains and losses in a national sample are remarkably consistent with those for a single school district. Moreover, the description of summer programs, the levels of participation, and the generally insignificant effects are also consistent. Since Summer Learning and the Effect of Schooling collected data on only two cohorts, for two years, the generally consistent findings based on six grades studied for three years are reassuring.

The studies reviewed to date have dealt exclusively with elementary school students. Although high schools are more likely to sponsor summer school programs, there has been far less attention paid to student outcomes at this level. The major exception is a recent demonstration project funded, in part, by the Ford Foundation, the Summer Training and Education Program (STEP), designed and managed by Public/Private Ventures (Branch, Milliner, and Bumbaugh, 1986). To this program we now turn.

The Summer Training and Education Program

The STEP program, which is about to enter its second summer of operation, is an experimental intervention conducted in five urban sites. The initial program involved 1,593 fourteen- and fifteen-year-olds provided with both academic remediation, and instruction in life skills, as well as the work experience provided under the Summer Youth Employment and Training Program (SYETP). Eligible youth in the five sites were randomly assigned to a STEP program or to the regular SYETP work experience, and both treatment and control students were compensated at the same rate--$3.35 per hour. The STEP remediation component provides 90 hours of basic skill instruction in reading and math, in an individualized and self-paced curriculum, utilizing computer-assisted instruction (CAI) for 25 percent of the remediation.

In general, both treatment and control students took the intermediate battery of the Metropolitan Achievement Test on the first day of the program and after seven or eight weeks. Attrition from the STEP program and poor attendance were low; over 90 percent of those pretested also took the posttest. In addition, in order to insure that students would be motivated to do their best on the pretest and posttest, special fees based on a lottery were introduced at each testing site and period.

The incentive scheme developed by Public/Private Ventures is, to my knowledge, a unique aspect of the program evaluation. Students were not paid for each correct answer, which would be a very costly solution; rather each correct response entitled students to one additional change to win in a lottery held after the testing. Fifteen winners of $50.00 each were selected at each site at each test administration for both treatment and control students. The lottery scheme seems an elegant solution to providing monetary incentives for correct answers that are sufficiently large to interest individual students, yet sufficiently economical so as not to bankrupt an evaluation budget.

Despite the incentives to do well on the tests, and despite the extensive remediation, both the treatment and the control students tended to lose ground during the summer. However, the treatment students lost significantly less in both reading and math than did the control students. Treatment students scored about one-quarter of a grade equivalent more than did the control students who received no remediation. Hispanics and Asians benefited the most from the treatment. Girls benefited in both reading and math, while the score of treatment and control boys were significantly different only in math. In three sites, significant differences in achievement favored the treatment students; in two sites differences were not significant but favored the treatment students. For the full sample, participation in STEP was worth 12.6 points on the math test and 5.7 points on reading (Branch, Milliner, & Bumbaugh, 1986, p. 72).

The research evaluating the STEP program is novel in both the care with which the experimental design was implemented and the incentives offered to students to take the test seriously. If either condition had not been present, the results would seem far more equivocal. Even with such precautions, however, the report is forced to explain how an achievement loss is really a positive program effect. In order to convince SYETP administrators nation-wide that summer educational remediation is worthwhile, STEP must argue that stemming summer losses in basic skills is a reasonable goal. While in educational circles, the logic of such arguments is clear, it is not certain that it will carry weight in the employment and training world. If treatment condition students show lower rates of dropping-out, perhaps that will be convincing.

Summer Loss in College Studies

Outcomes among university students are sufficiently far from elementary and secondary schools as to be non-comparable. However, at least one study has concluded that the summer is a critical period for disadvantaged college students (Kapsis, Protash, & Levin, 1984). In a longitudinal study of City University of New York freshmen, Kapsis and his associates report that during the school year advantaged and disadvantaged students tend to leave school at the same rate; during the summer, however, disadvantaged students and particularly those who have done poorly, experience the most pressure to drop out of school. Among those attending summer programs, however, re-enrollment rates do not vary by background. The authors argue that relatively advantaged students are involved in summer activities that reinforce educational commitments; students with less encouraging family backgrounds, however, are more likely to need or profit from year-round schooling.

Conclusions

The purpose of this paper has been two-fold; first, to summarize the deficiencies of data available on summer schools and second, to provide a context for analyzing and interpreting the results from the several evaluations that do exist. In the process it has been useful to review the studies that have been completed. Within a fairly broad conceptual framework, it seems there is substantial consensus among analysts. Although one can generalize across studies, the findings do not necessarily suggest new directions for research on summer programs.

There is virtually no information on existing summer school programs, even those that are partially funded by the Federal government. The content, structure, enrollment, duration and costs are not known. Moreover, anecdotal information and impressions suggest these programs are considerably more diverse and difficult to classify than regular school year programs, even when nominally devoted to comparable tasks such as compensatory programs.

The best evidence on the effectiveness of summer programs suggests they are not unequivocally successful. The major caveats to this conclusion are first, the programs tend to be short, voluntary half-day interventions with little semblance to regular programs and second, we do not have a clear criterion for effectiveness. The great majority of studies have observed relatively slower growth during the summer months; it is not clear whether effectiveness should be measured as "gains" or as "arrested declines." Without a valid expected growth curve, based on a metric sensitive to varying intervals of time, it is difficult to infer how particular treatments alter the pattern. Moreover, it seems likely that it is relative growth, not absolute change, that is the more important factor. Since standardized tests are normed on sample populations of children, rather than longitudinal observations, it may be that the most accurate inferences of change concern relative standing, not absolute growth or decline.

In sum, the major obstacles to Chapter 1 evaluations is the absence of appropriate comparisons. Without data on existing programs, it is difficult to say how any particular compensatory education program changes the educational context. Without a valid model of learning rates over time, it is difficult to infer change. While I trust these are not insurmountable difficulties, they are enormous challenges.

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CHAPTER 1 PROGRAMS REDUCE STUDENT-TO-INSTRUCTOR RATIOS BUT DO REDUCED RATIOS AFFECT ACHIEVEMENT?

by

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CHAPTER 1 PROGRAMS REDUCE STUDENT-TO-INSTRUCTOR RATIOS BUT DO REDUCED RATIOS AFFECT ACHIEVEMENT?

The Sustaining Effects Study of Title I programs (see Carter, 1984) included a description of the practices and services that constitute compensatory education. Based on extensive interviews and visits to 55 poverty-area schools, the report noted several major differences between the services received by compensatory education students and regular students. Among these differences was that Title I pupils received more hours of instruction in reading and math. In addition, Title I students more often received this instruction in smaller classrooms and/or in smaller instructional group settings.

The Title I Demonstration Study documented a similar impact on instructional settings (Archambault & St. Pierre, 1979). This study collected data from 12 school districts and compared the services received by Title I students and their non-Title I counterparts. The Demonstration Study found that, when compared to non-Title I students in either their own or other schools, Title I students spent about 13 minutes more a day in language arts instruction. About one-fourth of the Title I students' instruction occurred in a compensatory setting.

The Demonstration Study also documented differences in the size of instructional groups. The large majority of regular language arts instruction occurred in groups of 6 or more with about one-third of all regular instruction occurring in groups of 6 to 20 students. However, in 9 of the 12 districts more than 50 percent of the Title I students' compensatory instruction was at the individual level or in groups of 2 to 5 students. The percentage of compensatory instruction delivered in groups of 5 pupils or less ranged from 37 percent to 100 percent across the districts.

In sum, then, two effects of Title I programs, and the Chapter 1 programs that followed, are that children needing compensatory education get more instruction in basic skills areas and this added instruction usually occurs in small groups. Both effects can be viewed as products of the decreased student-to-instructor ratio that occurs because Chapter 1 programs allow the hiring of additional specialists, classroom teachers, and/or instructional aides.

The purpose of this paper is to examine the research on how student-to-instructor ratio effects influence schooling, with particular attention to how the research relates to low-achieving children. Two areas of research are particularly germane. These involve the effects on schooling outcomes of

(a) class or instructional group size and (b) scheduled, instructional, or engagement time. Because both areas have generated considerable interest within the educational community, numerous previous attempts to synthesize these research literatures already exist. Therefore, rather than attempt another synthesis, this paper will review the conclusions of several existing reviews of the literatures.

Class and Instructional Group Size

Class Size and Achievement

The first empirical study of the effects of class size on achievement was conducted by Rice before the turn of this century (Rice, 1902). Between 1900 and 1975, at least 76 more studies were conducted. Interest in class size was strong during the period 1910 to 1930, diminished from 1930 to 1960, and reemerged as an important topic during the past 25 years.

Since 1968, at least 20 reviews of the class size literature have been published. One of these reviews, by Gene Glass and Mary Lee Smith (1978), received considerable attention from both the educational research community and the general public. The conclusions of this review and some of the surrounding debate provide a good context for examining the underlying research literature and the issues raised by it.

Glass and Smith performed a meta-analysis on the outcomes of 77 studies that included 725 comparisons between a smaller and larger class on a measure of achievement. Half of the comparisons involved elementary school children and all types of subject matter were included. The size of smaller and larger classes varied from comparison to comparison, with a particular class size being the small class in some studies and the large class in others. For instance, in one study a "class" of one student was compared with a "class" of two students. In 197 comparisons, class sizes between 24 and 34 were compared to classes with 35 or more students.

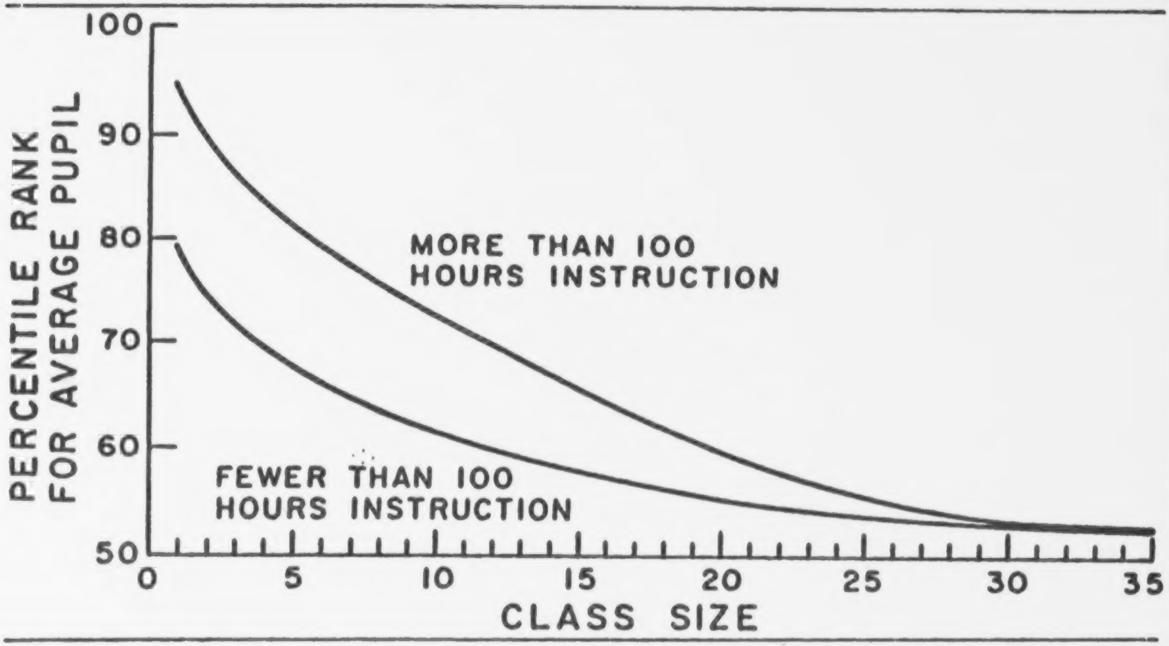
Glass and Smith found that 60 percent of all comparisons favored the smaller class. When classrooms with about 18 students were compared to classrooms containing about 28 students, the percent of comparisons favoring the smaller class rose to 69 percent. Ninety-eight percent of comparisons (45 of 46) between class sizes of 2 and 28 pupils favored the smaller class. In contrast, when smaller classes contained 30 students or more no advantage was found over classes larger in size.

The meta-analysis paid special attention to the 109 comparisons from studies that employed random assignment of pupils to the smaller and larger classes. Figure III-5 presents the mathematical relationship between class size and percentile achievement ranking of the average pupils in the class based on these experimental studies. The graph is set so that the rank for the average student in a class of 40 is at the 50th percentile. It should first be noted that the effect of class size appeared to grow as size was reduced, meaning a reduction from, say 10 to 5 students had a greater impact than a reduction from 30 to 25 students. Additionally, two curves are presented, one for comparisons of class size after more than 100 hours of instruction and one for studies of shorter duration. As the graph indicates, the meta-analysis found that studies covering longer periods of instruction found results more strongly favoring smaller classes. Two illustrations will demonstrate how the curves can be applied. First, the graph indicates that a student whose achievement surpassed 50 percent of his classmates in a class of 40 students would exceed 60 percent of these classmates if he were taught in a class of 20 students for over 100 hours. In contrast, this student would surpass 55 percent or 56 percent of students in classes of 40 if given less than 100 hours of instruction in a class of 20 pupils.

Glass and Smith noted that the curves generated by carefully controlled studies were steeper than those from less well-controlled studies. Perhaps most crucial to this discussion, the meta-analysis indicated that the relation between class size and achievement did not change significantly for students of different ages or different ability levels.

The attention given Glass and Smith's meta-analysis was due to the clarity of its findings. Whereas past reviews had labeled the literature inconsistent and inconclusive, this review found clear evidence that reduced class size produced increased academic achievement. As the journal Phi Delta Kappan (Staff, 1979) stated: "The Glass study is the first by a nationally recognized researcher to make unequivocal statements about the effects of class size on pupil achievement. It has enormous policy implications" (p. 411). However, the meta-analysis did not go uncriticized. Most prominent among these were (a) a reanalysis of the data by Hedges and Stock (1983), (b) two articles by Slavin (1984a, 1984b) appearing in the Educational Researcher, and (c) a monograph published by the Educational Research Service (1980).

Hedges and Stock (1983) noted that there were at least two problems with the estimation procedures employed by Glass and Smith. First, the effect size estimate used in the meta-analysis tended to overestimate the population effect size. Second, the variance of a study's effect size estimate should be based on its sample size and the Glass and Smith meta-analysis did not take this into account. Hedges and Stock



Source: Glass, G. V., Cahen, L. S., Smith, M. L., & Filby, N. N. (1982). School class size. Beverly Hills, CA: Sage.

Figure III-5. The Relationship of Class Size and Pupil Achievement Based on 109 Experimental Comparisons in the Research Literature

reanalyzed the data using more appropriate model assumptions. They concluded that the new effect size curves would lead one toexpect lower achievement in smaller classes than the original curves. However, smaller classes still led to higher expected achievement than larger classes and the shape of the curve remained unchanged. Also, the authors stated that, "the tests of significance confirm that class size accounts for a substantial amount of achievement variation, while also indicating that substantial sources of systematic variation remain to be explained" (pp. 83-84).

Slavin's (1984a) critique dealt primarily with the fact that Glass and Smith's effects were strongly influenced by studies of tutoring, not class size. Specifically, Slavin contended that if studies comparing a class composed of one student with a larger class were removed from the meta-analysis only a trivial effect of class size would remain. The description of how the achievement of an average child in a class of 40 would be affected by instruction in a class of 20 was an extrapolation based on studies of tutoring (Slavin, 1984b). Slavin summed up by saying that "there is nothing in the Glass et al. meta-analysis to contradict an assertion that class size makes no difference in achievement unless the smaller class has no more than three students" (p. 11).

Glass, Cahen, Smith, and Filby (1982) responded to this criticism by referring to an unreported analysis that calculated the curves eliminating all comparisons in which the smaller class size was less than 5 students. This analysis found the general shape and elevation of the curve to be similar to that in Figure III-5. Carlberg and Associates (1984) also defended the class size meta-analysis by taking the position that it is, in fact, legitimate to conceptualize the tutoring situation as a class size of one. Further, they claimed that Slavin's concern about extrapolating the effect size curve beyond a class size of three rests on the assumption that an extraordinary discontinuity of effect would occur between class sizes of three and four. The authors had never seen such a discontinuity and doubted that one exists.

The Educational Research Service (ERS; 1980) highlighted five additional areas of criticism. These were that: (a) the meta-analysis obscured important distinctions in class size research; (b) the major findings were based on too few studies and were thus overgeneralized; (c) the interpretation of findings was often contradictory; (d) the conclusions unjustifiably encouraged class size reductions; and (e) the generalizations created doubt about the need for further research.

Glass and Associates (1982) responded to each criticism, but three rebuttals are most relevant here. The meta-analysts said that they carefully examined numerous distinctions in the literature and found that, aside from hours of instruction, the differences were too small to justify separate conclusions. These distinctions included subject matter, I.Q. level, and grade level. In addition, they made no generalizations, certainly not to populations not included in the studies, but merely described their findings. Finally, the ERS assertion that too few studies were included was based on the decision to use only the carefully controlled studies to generate the curves, ERS ignored their discussion of the 77-study database in making the "too few studies" claim.

There is an important footnote to the ERS critique. Glass and Associates attempted to infer why ERS might have rejected their effort. They noted that ERS was established and supported by seven organizations representing school boards, administrators, and principals, or, according to the meta-analysts "the professional organizations in the United States who have historically been opposed to teachers' unions in negotiations over salary and working conditions" (p. 84). The implication was that the ERS interpretation was not independent of its sponsors' organizational relation to the class size issue. This relation dictated, at the least, a skeptical view on ERS' part of research finding benefit in small classes.

In light of its dismissal of the meta-analysis, it should be noted that ERS published its own review of the class size literature in the same year that the Glass and Smith effort appeared (ERS, 1978). Examining the findings of this review may help identify aspects of the class size and achievement relation about which there is some agreement.

The ERS review covered 24 studies involving grades K through 8, 14 studies at the high school level, and three general studies, all conducted since 1950. This review concluded that the research provided no clearcut guidelines for an optimum class size. At the same time, however, it was recognized that important decisions concerning class size could not await definitive research findings and that some assertions about class size effects were appropriate even if the existent research was less than adequate. In this spirit, ERS offered 19 "tentative [emphasis added] conclusions for consideration when school officials formulate educational policy" (p. 68). Among these conclusions were:

(a) the relation between pupil achievement and class size is highly complex;

(b) efficient class sizes are a product of many variables, including subject area, nature of the pupils, learning objectives, materials and facilities, and the skills and temperament of the teacher; and

> (c) within the mid-range of 25 to 34 pupils, class size appears to have little if any decisive impact on the academic achievement of most pupils in most subjects above the primary grade. (p. 69)

This last finding qualified but was not necessarily inconsistent with that of Glass and Smith (1978). Most salutary from the present perspective was a set of three conclusions about the research evidence that indicated:

> (a) Small classes are important to increased pupil achievement in reading and mathematics in early primary grades;
>
> (b) pupils with lower academic ability tend to benefit from small classes more than do pupils of average ability; and
>
> (c) smaller classes can positively affect the scholastic achievement of economically or socially disadvantaged pupils. (p. 69)

It may be possible, then, for those concerned with compensatory education to find some light amid the heat surrounding the interpretation of class size research. While they disagreed about the generality and robustness of the class size effect, both the meta-analysis and the ERS review concluded that smaller class sizes benefit the population of students served by Chapter 1 programs. Glass and Smith did so by finding the benefit of small classes held for students regardless of their intelligence level. ERS found the benefit for low-ability or economically disadvantaged children only. Further, the typical size of compensatory education instructional groups falls within the range about which there appears to be some agreement. It will be recalled that from one-third to all of Title I students in the districts sampled by the Demonstration Study received compensatory instruction in groups of one to five students. All the reviewers agreed that this is the end of the class size curve where effects are most dramatic and dependable.

Class Size and Nonachievement Variables

While a student's subject matter knowledge is certainly the primary concern of educators, achievement is only one aspect of children affected by the schooling process. Likewise, teachers are affected by their interactions with students. Attention needs to be paid, therefore, to the nonachievement effects of alterations in class size.

It should not be surprising to find that when Smith and Glass (1980) meta-analyzed the research on nonachievement correlates of class size they discovered the strongest relations involved teacher variables. Measures of effects on teachers included morale, absences, attitude toward students, expectations for performance, perceptions of satisfaction and workload, and professional growth. Of 30 comparisons between smaller and larger classes involving teacher variables, 25 favored the smaller classroom (Glass et al., 1982). The meta-analysts concluded that teacher morale and liking of pupils is higher and satisfaction with performance is greater in smaller classes.

The Class Size and Instruction Program conducted by Leonard Cahen and associates (1983), to be addressed in detail shortly, suggested reasons why class size has such a great impact on teachers. These authors noted that teachers face an enormous management task in monitoring and instructing a class of students. The reduction in class size, therefore, may have a pronounced impact on a teacher's cognitive load, and may make the effect of the reduction appear greater to the teacher than that which actually occurs. In fact, a 1973 Gallup Poll indicated that 85 percent of professional educators thought small classes "make a great deal of difference" in the achievement or progress of students (Elam, 1973).

The Smith and Glass meta-analysis also found positive effects of reduced class size on student variables. One group of effects, labeled "student attitudes," included measures of attitudes toward the teacher and school, self-concept, mental health, and motivation, among others. This category of effects demonstrated a difference of 29 percentile ranks between students in classes of size 40 and size 10. Another group of effects involving measures of student participation showed a difference between classes of 10 and 40 students equal to 23 percentile ranks. Finally, a group of variables measuring different types of student misbehaviors also favored smaller classes, but the number of comparisons was too small to estimate a percentile rank difference.

Class Size and Instruction

Studying the relation of class size to the outcomes of schooling is the first step in assessing the impact of student-to-instructor ratios on the educational process. However, it leaves unaddressed the equally important question of how changes in the number of students alter classroom life. Understanding how the process of schooling is affected by the size of the group in which it occurs help ensure that interventions will be implemented only in those circumstances most likely to produce the desired effects.

Smith and Glass' (1980) meta-analysis found that smaller class sizes were associated with greater individualization and informality, higher quality of instruction, and more positive school climate. However, only the individualization and quality of instruction categories contained sufficient comparisons to estimate the effect size in terms of percentile rank changes. Individualization included measures such as the teacher's knowledge of pupils, frequency of dyadic interactions, variety of activities, adaptation of teaching to individual students, and conferences with parents, among others. Quality of instruction included use of teaching aids, organization, task structuring, and number of varied and innovative activities, as well as more general quality assessments. Comparing classes of 10 students with classes of 40 students, the difference for individualization was 19 percentile ranks while for quality of instruction it was 17.

It is important to note that the meta-analysis effect sizes for all three nonacademic outcomes--teacher and student effects and classroom instruction--are expressed as a comparison of a large class, 40 students, that is not representative of the average size of present-day classrooms and a small class, 10 students, that is probably an unrealistic expectation for the reduced size of regular classes. Thus, the effects may be larger than those that could be reasonably obtained in practice. Also, the nonacademic effects of class size interacted with the age of the student. The impact of reducing class size was greatest for students under age 12, somewhat less for students 13 to 17, and least for students 18 and over.

While the meta-analysis gives an overview of the literature as a whole, examining the details of an exemplary study can provide additional insight and contextualization. The Class Size and Instruction Program (CSIP; Cahen et al., 1983) provided an in-depth examination of what happens in classrooms when class size is reduced. The CSIP study involved the intensive examination of four second-grade classes, drawn from one inner-city school in California and one rural school in Virginia. In both schools, class size was reduced by one-third in January by reassigning some students to a new class. In California, class size was reduced from 35 to 22 and in Virginia from 20 to 13. The research team used both quantitative and qualitative methods for collecting data, including coded observations, tests, discussions with teachers and students, and examination of student work, teacher journals and lesson plans, and school-wide documents.

Although specific changes sometimes varied, the CSIP study found certain consistencies across classes. The changes could be grouped into three categories: behavior management, individualization, and curriculum.

Teachers in the study felt that the smaller classes made discipline easier and that they spent more time teaching and less time policing. This perception was borne out by observational data indicating students paid closer attention when class size was reduced. Attention was enhanced in group discussions because fewer students were lost in the crowd and all students had more frequent opportunities to participate. The researchers speculated that the effect on participation might be most pronounced for low achievers because "in a small group, where control is perceived to be easier, the teacher may feel she or he can take time to draw all students into the lesson" rather than "rely on volunteers or high ability students in order to keep things moving along" (p. 202). During seatwork, attention is enhanced because the amount of contact time between teachers and students increases. This is simply a matter of the teacher having fewer students among whom to divide a constant period of time.

The behavior management results of the CSIP study are paralleled by results from the Sustaining Effects Study (Carter, 1984). This study found that the smaller instructional groups and lower student-instructor ratio associated with Title I programs was associated with more student on-task behavior, less teacher time in behavioral management, a more harmonious class environment, and a higher quality of cognitive monitoring, task monitoring, and organization of activities.

Teachers in the CSIP study also viewed the smaller classes as allowing greater opportunity to meet individual student needs. However, the smaller classes did not lead to dramatic individualization of instruction or curriculum. Group instruction continued and the curriculum was the same. Instead, teachers were able to provide students with more feedback, help, encouragement, and to find out more about individual feelings and interests.

While the curriculum was primarily determined by textbooks and remained unchanged by class size, teachers were able to cover it more effectively. Lessons ran more smoothly. Sometimes material was covered more rapidly and other times teachers expanded lessons by covering material in greater depth. The researchers noted that many of the enhancements to curriculum that occurred when class size was reduced might not immediately alter student achievement on tests. These enhancements were intended to promote positive attitudes, enthusiasm, and overall learning skills rather than narrowly defined subject domains.

The finding that smaller instructional groups often do not result in increased time spent on core material leads nicely into a discussion of the second effect of reduced student-to-instructor ratios, namely, increased allocation of time to basic skills instruction.

Allocated, Instructional, and Engagement Time

As noted previously, research indicates Title I students spend about 13 minutes more a day in language arts instruction than non-Title I students (Archambault & St. Pierre, 1979) and similar, if not greater differences exist in math and reading (Carter, 1984). Numerous models of learning, most notably those of Carroll (1963) and Bloom (1976), have suggested that the amount of time spent on learning is an important determinant of how much is learned. We might expect, therefore, that the added instruction provided in Chapter 1 programs would lead to enhanced achievement.

However, the relation between time and learning is not quite that linear and invariate. First, at least three distinctions must be made in how time is measured. Scheduled or allocated time is the time set aside by law, school, and/or teacher for a particular learning activity to take place. Instructional time is the actual amount of time spent on academic material within the allocated time period. Instructional time will be less than allocated time to the extent that allocated time is spent on classroom management and interruptions. Engaged time, or time-on-task, is the time that students spend actually attending to lesson material. Based on classroom observations, a student's engaged time can range from about 40 percent to 85 percent of allocated time (e.g., Karweit & Slavin, 1981).

A first caution, then, in drawing implications from the increased time allocated to instruction in basic skills for Chapter 1 students is that allocated time does not translate directly into time-on-task. Some of the allocation advantage is lost because Chapter 1 students are more often absent from school than their non-Chapter 1 counterparts (Wang et al., 1978). Thus, for each student the instructional time advantage is less than the allocated time advantage. Also, research indicates that students of higher ability are on-task a larger percent of the time. Evertson (1980) found that low-achieving junior high school students were engaged in academic activities about 40 percent of the time while high achievers were engaged about 85 percent of the time. Werner and Simpson (1974) found the difference to be 66 percent to 88 percent, respectively. This finding implies that the added instructional time Chapter 1 students receive may be considerably greater than the addition to their time actually attending to academic tasks. Finally, because the total amount of time available in a school day is usually equal for all students, the added time Chapter 1 students spend learning basic skills typically means they spend less time involved with other curricular material.

There are some positive points to be made as well. Several studies, including the Class Size and Instruction Program (Cahen et al., 1983), have found that the smaller groupings in which Chapter 1 students receive instruction may facilitate task engagement. This synergism between both student-to-instructor ratio effects should help mitigate the relation between ability and engaged time. Perhaps more important, even if much of the difference between time allocated to Chapter 1 and non-Chapter 1 students is eroded by student differences in attendance and engagement, the added time is still compensatory. That is, the extra time may diminish a difference in time-on-task that favors the more able students. The important comparison, then, may not be between students eligible and not eligible for compensatory instruction but between how much time eligible students are engaged in basic skills tasks with and without compensatory instruction.

Assuming that compensatory instruction increases the Chapter 1 pupils allocated, instructional, and engaged time, then it becomes relevant to examine the research relating time to achievement.

Time and Achievement

The most often cited study of time and achievement is the Beginning Teacher Evaluation Study (BTES; Denham & Lieberman, 1980). This study targeted for examination 261 second and fifth graders in 46 classrooms. Borg (1980) called the BTES the "most detailed and comprehensive information ever collected on the relationship between allocated time and achievement" (p. 49). Data for this study were collected through classroom observation and teacher logs, rather than from school records and teacher recall, as had been the case in previous research. Tests of achievement were designed for the BTES and were divided into subtasks of reading and mathematics. Most analyses were replicated during two separate periods of the school year.

Using multiple regression to predict the residual variance in posttest achievement after controlling for pretest scores, Borg (1980) found that allocated time explained a significant ($p<.10$) amount of variance for 11 of 29 achievement measures. The percent of variance explained, however, was generally small, mostly accounting for 3 to 6 percent of the pretest/posttest difference. Similar regressions using engagement time as the predictor proved significant in 13 of 29 cases, explaining from 3 to 26 percent of the variance.

In a composite analysis, regressions were run on measures of achievement using four indicators of academic learning time, all entered into the equation simultaneously. The indicators were: allocated time, percent of time engaged, percent of low difficulty activities, and percent of high difficulty activities. Nine of a possible 58 tests of the allocated and engaged time measures proved to be significant predictors of achievement. About three significant effects would have been expected by chance. It should also be kept in mind that the simultaneous entry of the variables in these analyses meant that any correlation between the predictors diminished the estimate of each predictor's unique effect.

The conclusion of the BTES was that time allocated to instruction in a content area increases learning in the area and that the proportion of allocated time that students are attending further predicts learning.

Several other studies of time and learning have been conducted and, as with class size, this literature has been subjected to numerous syntheses. In fact, at least 10 syntheses of the literature have appeared since 1980, with several prompted by proposals to lengthen the school day or year. Two of these reviews will be summarized here. The first, by Wayne Fredrick and Herbert Walberg (1980), appeared in the Journal of Educational Research and was summarized in the Encyclopedia of Educational Research (Walberg & Fredrick, 1983). The second, by Nancy Karweit (1983), appeared as a technical report from the Center for the Social Organization of Schools and was summarized in the Educational Researcher (Karweit, 1985).

Fredrick and Walberg (1980) classified studies according to the unit of time measured: years of schooling, days in the school year, hours in the school day, and minutes of instruction. Only the studies of instructional time will be reviewed here.

Nine studies of instructional time and achievement were reviewed and the authors found that all nine showed a positive relation. They reported that the "correlations ranged from .15 to .53, but when other relevant variables were partialled out (I.Q., ability, readiness) they ranged from .09 to .44" (p. 190).

Although Fredrick and Walberg used the term "instructional time" to describe the studies they reviewed, a majority of the studies actually examined time-on-task. The authors noted that refining the measure to reflect actual time devoted to the outcome increased the magnitude of the correlation, but no specific data was given.

Finally, Fredrick and Walberg noted several studies that indicated the relation between time and learning reaches a plateau at which additional time has only a marginal impact on achievement. The exact nature of this curve was not estimated because the variations in time and achievement in previous studies had not been great enough to warrant such precision. Several reasons for the curvilinear relation were offered. These included: (a) achievement tests cannot detect high levels of gain; (b) progressively more pupils reach the ceiling of the skill and can improve no further; (c) instructional procedures may need to be changed as students become more skilled; and/or (d) the nature of learning itself may cause diminishing returns (Walberg & Fredrick, 1983).

Karweit (1983) began her synthesis by recasting some of the BTES results. First, she noted that partialing out the effect of pretest achievement on posttest achievement does not completely control for the relation between achievement and engagement. Therefore, the regression weight in the equation associated with engagement may be overestimated.

Karweit also pointed out that the effect of allocated time revealed in the BTES could be expressed as the number of additional minutes of instruction that would be necessary to increase the average student's achievement a certain amount. For instance, using the BTES regression equation for second-grade reading comprehension that included the four indices of academic learning time, Karweit found that it would take an additional 60 minutes per day to raise comprehension one-quarter of a standard deviation. A .25 standard deviation gain in total math achievement in grade 5 would require about 65 additional minutes of instruction per day. Based on these analyses, Karweit suggested that "dramatic changes (in allocated time) would be required to increase achievement by a quarter of a standard deviation" (p. 25).

Two important cautions need to be kept in mind when interpreting Karweit's analysis. First, her analysis assumed that the increase in allocated time would occur while the other three elements in the equation, percent of time engaged and percent of high- and low-difficulty activities, were held constant. Therefore, accompanying changes in these variables could reduce the amount of additional allocated time needed to produce the desired effect. Second, the added time necessary to have the desired effect was set to correspond to the length of the BTES observation period, which was about 70 days. Thus, the addition of about an hour of reading and math instruction per day would raise the average student's scores one-quarter standard deviation in about 14 weeks, or a third of a school year. The choice of a relatively short period for the effect to occur may make the daily increase in time needed to produce it appear large.

In addition to the BTES results, Karweit reviewed seven other studies, six of which examined engaged time or attention and learning. She reported a range for zero-order correlations between .25 and .58 and between .09 and .43 when initial achievement level was controlled for. These ranges are quite similar to those reported by Fredrick and Walberg (1980).

Karweit summarized her findings by stating that "very few negative effects of time-on-task on achievement are found" and "it would probably be helpful (and certainly not harmful) to encourage teachers to minimize time wasted and to try to increase student engagement" (p. 33). However, Karweit diverged from the conventional interpretation of this literature when she assessed the impact of time-on-task relative to other influences on classroom learning. She argued that "these findings point toward an explanation of classroom learning based more on accommodating student diversity in readiness for instruction and rate of learning and on quality of instruction than on the gross quantity of instruction delivered to or consumed by students" (p. 34). Simply adding time may not be a wise policy. A wiser policy, according to Karweit, would aim at more efficient use of time already available (also see Levin, 1984).

In sum, then, the literature on time and achievement indicates allocated, instructional, and engaged time all correlate positively with learning. The relation appears to grow stronger as the measurement of time moves from how much time is scheduled for learning to how much attention students pay to instruction. Also, the effect of additional time on learning appears to diminish as total time increases, but the underlying function curve is as yet unspecified. Finally, debate exists about whether the magnitude of the time effect, relative to other possible interventions, warrants the expenditure of resources needed to increase allocated time.

Time and Nonachievement Variables

The evidence is scant relating students' attitudes toward subject matter and the amount of time spent on them. Fredrick and Walberg (1980) located only two studies addressing this issue. In an observational study of sixth graders, Lahaderne (1968) found no significant relations between attitudes and time for various subjects. In a study of university students, McMillan (1977) found students who spent more time preparing an assignment had more positive attitudes toward it.

The area of time and attitudes deserves further attention, especially because of its role as a possible mediator of the time and achievement relation. However, correlational studies will be of little use in this area because it is highly plausible that positive attitudes will lead students to spend more time on tasks. To assess the effect of time as the causal agent it will be necessary to experimentally manipulate the time variable.

Time and Instruction

Neither Fredrick and Walberg (1980) nor Karweit (1983) identified studies that examined the effects of allocated or instructional time on how curriculum material was presented. While there is some indication that students' time-on-task does not increase proportionately with increases in allocated time, we have no evidence concerning whether the proportions of instructional and management time change as allocated time changes. A study by Karweit and Slavin (1981) of time use in 12 classrooms would suggest little relation between the amount of allocated time and the proportion of that time spent in instruction or management. Again, however, this was a cross-sectional study and not a study of time change. It would be important to determine whether additional time is more often used to cover more curriculum material, to reinforce core material, or to present material that enriches the core curriculum.

Inhibitors of Reduced Student-to-Instructor Ratio Effects

The positive effects that reduced class size and increased time can have on the learning of basic skills certainly do not occur across all circumstances. Group size and time are just two elements among many that form the learning environment. Without exception, the primary investigators and major reviewers in these areas have identified or suggested other contextual factors that can diminish the benefits of reducing the student-to-instructor ratio.

Most discussion of moderators of class size and time effects have focused on the adaptability and skills of the teacher. The Class Size and Instruction Program study (Cahen et al., 1983) noted that teachers develop educational programs they are comfortable teaching and have been accepted at their schools. Changing the context in which the program occurs by reducing class size might not be enough in itself to induce a change in the program. Cahen and Associates concluded that teachers must desire a new program and must be willing to expend the personal time and effort needed to establish it. A similar willingness to adapt would seem essential for increases in allocated time to have their desired effect.

With regard to teaching skills, ERS (1978) noted that the teacher must know how to take advantage of the opportunity for greater individualization. Student learning will be the same whether the size of a class is 4 or 40 if the teacher is proficient only at lecturing. According to Noddings (1978) the individualization of learning can have negative effects if teachers inadequately monitor student progress so that students spend time practicing errors or failing to follow directions.

Finally, the overall quality of instruction can overwhelm the impact of any other contextual manipulation. ERS (1978) concluded that the class size research pointed to the importance of methods and quality of instruction rather than the raw number of students in class. Similarly, the World Bank (1978) conducted an overview of studies carried out in emerging nations and this review indicated that quality of instruction rather than the number of pupils in classes was the critical factor. Karweit (1983) makes the same precaution about the effects of allocated time.

Beyond teacher variables, an important moderator of group size and time effects may be the congruence between curriculum content and test materials. This point was highlighted by the Instructional Dimensions Study (Cooley & Leinhardt, 1978). The IDS modeled the processes occurring in 400 first- and third-grade classes in 100 schools serving disadvantaged students. The major findings revealed that individualization of objectives, pacing, diagnosis, and prescription were not a uniquely effective teaching strategy, other approaches worked equally well. The amount of instructional time was found to be an important determinant of achievement and this was especially the case when the instruction emphasized the particular skills measured on the achievement tests. Thus, a moderator of both class size and time effects was the amount of opportunity to learn the material contained on exams.

The Instructional Dimensions Study also reported that the extent of pullout instruction was not significantly related to achievement. Two other studies included findings indicating that, if class size reductions and additional instruction are accomplished through pullout, aspects of pullout situation itself may mitigate their positive effects. The Austin Independent School District (Doss & Holley, 1982) found schoolwide reductions in class size had a greater positive effect on the achievement of Title I students than did pullout programs. A suggested reason for the relative ineffectiveness of the pullout programs was "the regular classroom teacher's decreased sense of responsibility for the special program students" (p. 1).

A study by the Rand Corporation on the aggregate effects of Federal education programs (Kimbrough & Hill, 1981) also included some suggestions about why pullout methods might obviate the benefits of reduced student-to-instructor ratios. These authors found that in some school districts pullout programs (a) interrupted or replaced core instruction, (b) segregated minority students for large portions of the day, (c) imposed administrative burdens on teachers, (d) used methods and materials incompatible with those being used in regular classrooms, and (e) created conflict between staff members. Each of these influences might serve to diminish or negate the positive effects on learning that more time in small groups might have the Chapter 1 students.

Summation

Attempting to identify the effects of reduced student-to-instructor ratios on student achievement required the examination of two hotly debated topics in educational research. Reviewers of the class size literature disagreed over whether a reduction in instructional group size has its intended effect and, if the effect in fact exists, how general it is over other variations in the learning environment. However, some consensus did emerge with regard to the circumstances most relevant to this discussion. Reduced class size appeared to be most efficacious with low-ability or disadvantaged students when reductions were in the range typically associated with Chapter 1 programs. Such reductions may not only lead to higher achievement but to better student and teacher attitudes and morale and to an enrichment of the core curriculum.

There was less controversy over the research on time and learning. Scholars in this area generally agreed that increases in allocated, instructional, and engaged time lead to increases in learning. However, because allocated time does not translate directly into more time-on-task, allocated time shows a lesser relation to achievement than more proximal time measures. Increases in time also showed diminishing returns, but the nature of the curvilinear relation between time and achievement is as yet unspecified. Disagreement existed among scholars over whether the size of the effect warrants increases in allocated time, as opposed to other types of interventions. Also, related research indicated that the greater amount of allocated time given to Chapter 1 students may not represent a net advantage. Instead it may serve to lessen an advantage that more able students possess because they generally spend more time engaged in appropriate tasks.

Finally, the literature on both topics contains numerous cautions suggesting that reductions in class size and increases in time cannot be depended upon to produce positive effects in all circumstances. For these interventions to be effective (a) teachers must be adaptable and have the skills and motivation to capitalize on them, (b) the material taught and tested must fit together, and (c) the strategy for accomplishing the reduced student-instructor ratio must not create as many barriers to learning as it breaks down.

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INSTRUCTIONAL SETTING: KEY ISSUE OR BOGUS CONCERN

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INSTRUCTIONAL SETTING: KEY ISSUE AND BOGUS CONCERN

Research conducted during the past decade, particularly the major Federal studies of the Elementary and Secondary Education Act (ESEA) Title I and the Emergency School Aid Act (ESAA), has revealed a great deal about the nature of compensatory education. Secondary analyses of the data collected in these studies and the large number of discussions and debates which they prompted have also been informative, as have the results of more modest studies conducted at state and local levels. Despite the wealth of information gained, however, much remains to be learned about the effect which various instructional methods have on the performance of the academically disadvantaged.

One issue that we know surprisingly little about is the effect of instructional setting, that is, the effect of pullout versus in-class instruction. Put simply, pullout instruction means that students receive their compensatory instruction outside the regular classroom. In-class instruction means that they receive it in the regular classroom environment. Research has clearly shown that Title I provided predominantly pullout instruction. Although national data are not yet available, it appears that pullout is still the preferred method of instruction under Chapter 1, Title I's replacement. Critics of pullout have argued that it has been used in large part to demonstrate compliance with certain program regulations and that it is not justified on pedagogical grounds. Among other things, they have also argued that pullout diminishes cooperation between regular and compensatory instructors, that it reduces teacher responsibility for pupil progress, that valuable content is lost when pullout instruction is received, that it unnecessarily labels and stigmatizes students, and that it leads to resegregation. Proponents have countered that pullout provides the opportunity for more concentrated instruction delivered to smaller groups of students by better-trained teachers. Thus the lines have been drawn, with both sides contending that they have convincing evidence for the superiority of their favorite strategy. What is disconcerting, however, is that the proponents of pullout have comparatively little evidence to justify its widespread use and the critics of pullout would be similarly hard-pressed to justify a wholesale shift to in-class instruction.

This paper reviews the somewhat sparse and sometimes confusing literature surrounding this instructional setting debate. It begins with the question: What do we know about the nature of instruction in Title I and Chapter 1 programs? It then provides answers to the following three questions: 1) What do the legislation, Congress, and the U. S. Department of

Education say about the use of pullout and other models of instruction?; 2) What is the impact of pullout instruction on students' achievement in reading, language arts, mathematics?; and 3) What other effects of pullout versus in-class programs have been noted in the literature? Following these discussions, the paper briefly describes key variables and issues to consider in designating compensatory instruction programs.

Because the majority of Chapter 1 dollars are allocated to elementary schools, this review focuses on these early grades. Likewise, because the large number of dollars invested in Chapter 1 provide remedial instruction in reading, language arts, and mathematics, these content areas are emphasized.

Types of Students Served and the Nature of Instruction

The best information on who is served by Federally funded compensatory education programs and the types of services received by them continues to come from a set of studies conducted in the mid-to-late 1970s. Breglio, Hinckley, and Beal (1978) and Carter (1984), reporting on the results of the Sustaining Effects Study conducted by Systems Development Corporation (SDC), provide good information on the economic status and achievement level of Title I participants. They suggested that for the period of their research (i.e., three school years beginning in 1976-77) Title I was serving about 15 percent of all elementary grade children in the United States. Among low-achieving students, 45 percent received compensatory education and 54 percent did not. Among economically poor students, about 40 percent received compensatory education and 60% did not. The Sustaining Effects Study researchers also found that more non-poor than poor students and more regular-achieving than low-achieving students were receiving Title I while about 2,000,000 low-achieving students were not receiving any compensatory education. Finally, they found that relative to their number in the total student population, the students most likely to receive compensatory education services were Hispanic and Black, and were in large cities and rural areas.

On a somewhat smaller scale, Vanecko, Ames, and Archambault (1980) reported that 65 percent of the Title I students in the 13 districts they were studying read one year or more below grade level (i.e., were poor achievers), 69 percent received free or reduced-priced lunch (i.e., were poor), and 53 percent were minority group members. They also reported sizeable variations across districts for each of these measures, particularly minority group membership.

With regard to the nature of services received by these students, a variety of issues might be raised. Wang et al.

(1978), for example, in one of the reports emanating from the Sustaining Effects Study, provide impressive detail on the amount of instruction received by compensatory education (CE) and non-CE students in various types of schools, the grouping patterns for this instruction, the approaches to instruction used in these groups (i.e., whether lesson plans are used, the type of feedback provided to students, the type of special equipment used, the teaching approaches used, etc.), the type of instructor providing this instruction, the setting for instruction, and so forth. Readers interested in specifics on these issues are referred to this lengthy report. For purposes of this paper, and more in keeping with the National Institute of Education (NIE; 1977) report on compensatory education services, the following subset of issues will be addressed: (1) the amount of instruction received; (2) the type of grouping used for instruction; (3) the type of instructor providing the instruction; and (4) the setting for instruction.

Amount of Instruction

NIE (1977) reported that three-quarters of Title I funding goes to instructional services, about five percent goes to auxiliary services, and the remaining 20 percent is allocated to several categories of other expenditures which vary from district to district. Viewed from another angle, about 95 percent of Title I districts offer remedial reading or language arts as part of their compensatory education activities and about 45 percent offer remedial mathematics. No more than about 10 percent of the districts offer any other particular type of instructional activity.

With regard to the amount of instruction received, NIE (1977) reported that students spent about three and three-quarters hours per week in compensatory language arts and about 3 hours per week in compensatory mathematics. Archambault and St. Pierre (1980), describing the language arts findings of the Title I Demonstration Study, reported somewhat smaller amounts of time for compensatory instruction. They also reported that although Title I students received more total language arts instruction (i.e., regular and compensatory instruction combined) than non-Title I students in the same school, Title I students received less regular classroom instruction. Thus, they concluded "that the Title I students' compensatory language arts instruction replaced a portion of the regular language arts instruction delivered to other students in the district" (p. 36). Kimbrough and Hill (1981), Lignon and Doss (1982), and Allington (in press) reached a similar conclusion. Wang et al. (1978) reported that CE students in general and Title I students in particular received more hours of instruction than their non-CE peers at the upper elementary grade levels. This advantage was not found in the early elementary grades. Coulson et al. (1977) also found that CE students received greater amounts of instruction in reading and mathematics than less needy students. Carter (1984) offered the following comments on the amount of instruction received: "Title I students received considerably more hours of instruction in reading and math than did regular students. But while Title I students were receiving this additional reading and math instruction, regular students were also receiving instruction in various subjects, including other language arts activities, other math, social studies, field trips, and physical education. Thus it is not clear that Title I students enjoyed a net gain in total instruction" (p. 5).

Somewhat more recent data on the nature of instructional services is available from the District Practices Study conducted by Advanced Technology, Inc. (1983). Like the other national studies, this study also found that reading and mathematics were the first and second most important components, respectively, of Title I programs. However, somewhat higher estimates of the numbers of districts offering such instruction were reported (i.e., 97 percent of the Title I districts for reading and about 67 percent for mathematics). One of the goals of the District Practices Study was to assess the expected effects of Chapter 1 on local school districts' implementation of compensatory education programs. Beyond this, however, national level data do not yet exist on the actual impact of Chapter 1. Carter (1984) has commented on this state of affairs: "Beginning with the 1982-83 school year, Title I has been succeeded by Chapter 1 of the Educational Consolidation and Improvement Act of 1981. Although theoretically Chapter 1 gives local authorities somewhat greater programmatic flexibility, it is believed that the results reported here for Title I will apply equally well to the new Chapter 1 compensatory education program" (p. 4). How good a prophet Carter is remains to be seen.

Class Size, Grouping, and Individualization

All of the national studies concur that compensatory education students receive their instruction in somewhat smaller classes than regular students. NIE (1977), for example, reported that the average class size for compensatory instruction was 9 students in reading and 12 students in both language arts and mathematics. On the other hand, the average size of the homeroom from which these students were drawn was 27. The District Practices Study found that there were an average of 9.8 children in a Title I class and that there was an average pupil-to-instructor ratio of 4.5 to 1. NIE (1977) also reported that the average size for instructional groups was four to five students. Coulson et al. (1977), Wang et al. (1978), Archambault and St. Pierre (1980), and Carter (1984) likewise reported smaller group sizes for students receiving compensatory instruction. Related to class size and grouping, at least in the sense that smaller classes and groups afford greater opportunities for teacher flexibility, is the issue of individualization. Unfortunately, but not unusually for educational practices, a common definition of individualization does not exist. As a result, it is extremely difficult to compare results across studies. Nonetheless, it does appear from the literature that teachers of Title I students use different methods and practices than teachers of regular students (Carter, 1984). Moreover, according to NIE (1977), Cooley and Leinhardt (1980), and Frechtling and Hammond (1978) it also appears that at least some of these techniques (i.e., alternative learning paths and sequencing for individual children, individual or small-group pacing, assignment of specific learning objectives or activities to individual children, diagnostic and prescriptive teaching, etc.) may be viewed as components of individualized instructional programs. However, as noted by NIE (1977), some of these techniques are used more than others, and, as reported by Frechtling and Hammond (1978), it appears that lots of different instructional approaches can work.

Type of Instructor

Archambault and St. Pierre (1980) reported that the large majority (i.e., about 73 percent) of regular language arts instruction was delivered by classroom teachers. For compensatory instruction, on the other hand, the large majority of the instruction was delivered by instructional specialists (about 66 percent) or paraprofessionals (about 24 percent). Wang et al. (1978) reported that CE students received far more individual or small-group instruction from special teachers and aides than did their non-Title I peers. Generally, these instructional specialists have a higher level of educational attainment than the regular classroom teachers (Vanecko, Ames, and Archambault, 1980; Coulson et al. (1977). Carter (1984) also found that Title I specialists had somewhat more coursework and inservice training than regular teachers but that they had somewhat less teaching experience. Cooley (1981) summarized the findings on the type of instructors employed by Title I as follows:

> The Title I supported teachers provide additional instructional services to eligible students. Two aspects of the (Title I) regulations complicate their deployment in the schools. Teachers are not to serve students who are ineligible for Title I services, and they cannot be the only teachers to serve eligible students....Thus, schools have little alternative but to pull children out of their regular classrooms for part of the week and provide this "extra" instruction in special Title I classes with other eligible children. (p. 299)

With this in mind we turn now to a review of the literature concerning the setting or location for instruction.

Setting for Instruction

Instruction can be delivered within the regular classroom, outside the regular classroom, or partially inside and partially outside the regular classroom. Instruction delivered outside the regular classroom has been given the name pullout instruction, since recipients are removed or pulled out of their regular classroom and sent to another location. Usually, this location is within the same school building, and the instruction delivered there, as noted above, usually is provided by an instructional specialist working with smaller groups of children than were in the classroom from which the Title I student was removed.

What do we know about the amount of instruction delivered in various settings? Carter (1984) reported that compensatory instruction was typically provided in a pullout setting, as did Vanecko, Ames, and Archambault (1980), Archambault and St. Pierre (1980), Kennedy (1978), Stonehill and Anderson (1982), NIE (1977), and others. In one national study (Advanced Technology, 1983) over 90 percent of the districts in the sample employed a pullout design exclusively or in combination with an in-class model; only 30 percent of the districts used an in-class design.

NIE (1977) reported that almost 75 percent of the students in Title I reading programs received their instruction in a pullout setting. About 41 percent of the compensatory language arts instruction was also delivered in a pullout setting, as was about 45 percent of the mathematics instruction. NIE also reported that about 24 percent of compensatory education students receive their regular instruction in groups comprised of only CE students. Glass and Smith (1977) claim that when the NIE pullout figures are corrected to eliminate pupils in 100 percent Title I eligible classrooms who do not need to be pulled out, the pullout rates in all other classrooms rise to 84 percent for reading, 54 percent for mathematics, and 50 percent for language arts. Glass and Smith go on to argue that "when one considers further that pupils might be 'pulled out' for one of these subjects and not the other, it is plausible to say that in classes not 100 percent 'Title I eligible' the practice of 'pullout' for compensatory teaching is nearly universal" (p. 2).

Coulson et al. (1977) reported that the amount of the total instructional time students spend in pullout programs represents a small percentage of the total time devoted to instruction (i.e., less than nine percent for both reading and math). However, they also concluded that the actual amount of time had increased between 1973-74 and 1974-75, the two years for which data were analyzed.

More recently, Advanced Technology, Inc. (1983) reported that pullout programs were being used less frequently and that the use of in-class designs was on the rise. Unfortunately, it is not possible to provide more current national data than this. Thus, it is also not possible to determine at this time, and on a national level, whether ECIA and the resultant streamlined set of Chapter 1 regulations may be stimulating increased use of the in-class model. However, despite some evidence to the contrary (Allington, in press; Plato and Rasp, 1984; Hayes, 1983; Vasquez and Nuttall, 1983), personal conversations with a number of state and local administrators indicate that in some regions of the country there may in fact be an increased use of in-class or combined pullout and in-class approaches. The extent to which this has occurred remains to be seen. If this has occurred, however, one would suspect that it was due to either changes in the law and regulations (i.e., changes from Title I to Chapter 1) or to changes in the perceptions of those directing compensatory education programs at the various levels of the state and national educational establishments.

Law and Regulations Surrounding Pullout

As noted above, the pullout model has enjoyed wide popularity as a vehicle for delivering Title I instruction. Given this, one would assume, or perhaps it might be more accurate to say hope, that the pullout approach is favored on pedagogical grounds. Vanecko, Ames, and Archambault (1980), however, argue "the pullout model has not necessarily been selected for pedagogical reasons, but rather to comply with state and local perceptions of Federal requirements" (p. 108).

Two provisions in the Title I legal framework appear to have provided the springboard for pullout instruction. The first is the supplement-not-supplant provision, which mandated that Title I funds be used to supplement funds available from non-Federal sources for regular instructions and for certain local or state compensatory education programs. These same Title I funds could also not be used to supplant or replace such funds from non-Federal sources. The second provision, the excess costs requirement, provided that Title I funds could be used to fund only the excess costs of Title I programs and projects. Gaffney and Schember (1982) shed a great deal of light on how these two provisions effected Title I instruction:

> In earlier years there was some uncertainty about what the supplement-not-supplant/excess costs provisions required of schools to ensure that Title I participants received extra services. When auditors from the U.S. Department of Health, Education and Welfare cited school districts for in-class programs that also served non-Title I students (a "general aid" violation), some states and districts perceived the problem to be "supplanting" and turned more to pullout models as the solution. Consequently, though Title I never so stated, some program administrators believed pullout designs were legally required, or necessary to avoid audit problems; and some states refused to approve any in-class programs. Thus, "uncertainty or misconceptions about the meaning of certain requirements and the fear of possible audit violations" led some states to promulgate "overly restrictive policies concerning the types of programs Title I may fund." (pp. 6-7)

Gaffney and Schember also note that more frequent use of pullout instruction actually may have increased rather than decreased the number of supplement-not-supplant violations, particularly where students were pulled out for long periods and Title I instruction substituted for, instead of supplemented, state and locally funded instruction the students otherwise would have received.

In 1978 Congress tried to correct this situation by stating that Title I did not require any particular instructional strategy and by directing the Office of Education to develop regulations which told program administrators how to design in-class as well as pullout programs. In the 1981 Title I regulations even more clarification was offered, and six types of models were described: (1) in-class, (2) limited pullout, (3) extended pullout, (4) replacement, (5) add-on, and (6) other. It was also indicated later in 1981 that the regulations setting forth the six program design models were guidelines which could be followed rather than regulations which had to be followed.

In the summer of 1981 Congress went even further by repealing the excess cost provision and by adding a new provision stating that pullout projects could not be required to prove compliance with the supplement-not-supplant requirements of the new Educational Consolidation and Improvement Act (ECIA). Gaffney and Schember (1982) claimed that despite this the Department of Education also argued that they had not changed their interpretation of how the supplement-not-supplant provision applies to the design of instructional programs.

The following conclusions appear to flow from the above discussion: (1) prior to the passage of ECIA in 1981 pullout programs may have been instituted in large part as a means of complying with what were perceived to be Federal regulations, for the purpose of avoiding sanctions resulting from violations of these regulations; (2) that at least from the vantage point of 1981 Congress claimed that they never required pullout for districts to be in compliance with the provisions of the regulations; and, (3) that in the last days of the Title I regulations, but even more clearly under Chapter 1 regulations, the Department of Education has specifically suggested that instructional models other than pullout should be considered. However, all of these pronouncements appear to have been made without conclusive evidence about the pedagogical effectiveness of these various alternatives.

Impact of Pullout on Achievement

This section and the one which follows are concerned with the impact of instructional setting on certain outcome variables. This section reviews the evidence concerning student achievement. The next section discusses the impact of setting on student and teacher attitudes and morale. The following picture emerges from this review: (1) in some cases compensatory education in a pullout setting leads to higher student achievement than in-class instruction, in other instances in-class instruction has a more positive effect, and in still others, and these appear to be the majority of cases, the setting for instruction has no significant effect on student achievement; (2) the findings on the cost effectiveness of the approaches are also mixed; (3) the type of instruction delivered within a particular setting is more important than the setting itself; (4) perceptions about the appropriateness of either the pullout or in-class setting vary from site to site and are most likely influenced by the types of programs that have been implemented at the sites, teachers' and administrators' perceptions of what is best for compensatory students, and the conditions or circumstances peculiar to the site; and (5) the in-class setting is strongly preferred by some authors on moral and ethical grounds.

One of the first large scale (n = 8319) investigations of the effect of pullout was the third year evaluation of the Emergency School Aid Act (Coulson et al., 1977). In this study, the impact of pullout and 18 other variables was investigated across two types of compensatory education programs (Pilot and Basic Programs), two content areas (reading and mathematics) and three grade levels (3, 4, and 5). Pullout was defined here as the proportion of reading or mathematics instruction received outside the regular classroom, and, along with 18 other variables, it served as a predictor variable in 12 regression equations (2 programs x 2 content areas x 3 grade levels yields 12 equations). For eight of these analyses no significant differences were found for the pullout variable. In the other four instances three of which were concerned with reading, pullout was found to have a significant negative effect on achievement. Leinhardt and Pallay (1982) interpret these findings to mean that a change from receiving one-half instruction in reading to receiving one-half instruction in pullout would be associated with a small reduction in the dependent measure. These researchers argue that no matter what the dependent measures was, the effect was very small.

Perhaps evens more important than the small effect size is the strong possibility that pullout was associated with less gain because (1) less able students tended to get pullout instruction and (2) the pretest did not control adequately for such differences. Further, and as suggested by Coulson et al. (1977), schools were more likely to use pullout instruction when they had students with more severe problems.

The Instructional Dimensions Study (IDS) conducted for NIE by the Learning Research and Development Center (LRDC) at the University of Pittsburgh also was concerned with the effect of pullout. This research focused on reading and mathematics instruction in first and third grade and used classrooms as the basic unit of analysis. Here the variable "setting" was scaled as a composite of the time students were in supplemental instruction outside the regular classroom and the number of children in a classroom that were pulled out for instruction. NIE (1977) reported that the results uncovered in this research differed by content area and grade level. First-grade students receiving instruction in the regular classroom (i.e., the in-class setting) made significantly larger gains in reading and mathematics than those in pullout settings. However, at the third-grade level, setting had no significant effect on reading achievement and pullout was associated with larger achievement gains in mathematics. NIE interpreted these results to mean that neither setting is consistently associated with greater instructional effectiveness.

Arguing that the test was too difficult Glass and Smith (1977) criticized the NIE study for using the achievement pretest as a covariate. Consequently, even researchers at LRDC argued that the covariate did "very little to adjust for initial differences among first-grade students, and the use of gain as a dependent variable (worked) no better (probably worse) than posttest" (Leinhardt and Palley, 1982, p. 568).

Subsequent to these criticisms, Frechtling and Hammond (1978) reported on a reanalysis of the NIE findings. These researchers, who were part of the team monitoring the IDS study for NIE, noted that rechecking and cleaning the data changed the previously described picture slightly. As before, in-class instruction was found to have a positive effect on achievement at grade 1 for both reading and mathematics. At grade 3, however, in-class instruction was found to be more effective for reading (there was no difference previously) while no significant difference was found for instructional setting when mathematics was considered (pullout was more effective previously) [see Table III-2]. Frechtling and Hammond (1978) argued that despite these changes in the previously reported findings they would "be uncomfortable concluding from the IDS data that districts should use only the in-class approach" (p. 9). They offered several reasons for their position: (1) the IDS findings were based on data from districts that were "special" and not nationally representative; (2) they had a gut feeling that mainstreaming (i.e., in-class instruction) may pose problems for many teachers and simply not be possible in some instances; and (3) they were unwilling to generalize from a single study. On this last point they argued that "the IDS, despite all its virtues, is only one study, and convergent evidence from other work is not yet strong enough" (p. 9).

Cooley and Leinhardt (1980) and Leinhardt and Palley (1982) also report on the IDS study and, to make matters somewhat more confusing, their findings are different from those reported by NIE. Cooley and Leinhardt (1980) reported that setting was related to student achievement gain only in third-grade reading and that more time in pullout was associated with less gain. As can be seen in Table III-2, this is quite different from NIE's interpretation of the findings.

Leinhardt and Palley (1982) discuss a reanalysis of the IDS data in which they at least partially addressed the criticism of the pretest measure leveled by Glass and Smith (1977). In these analyses they included only children who had received pullout instruction and they treated setting as a student level variable rather than the classroom level variable employed in their previous analysis. They also changed the nature of the setting variable, redefining it as the number of minutes a child was in pullout. With these changes, they ran four equations (reading and math at grades 1 and 3) which regressed posttest on pretest, the number of minutes in pullout, and instructional overlap (i.e., the degree to which material tested was actually covered in instruction). Leinhardt and Palley (1982) based the following conclusion on these reanalyses:

> Reanalyzing the data with only those children that received pullout changed the picture dramatically. In the analysis with the non-pullout students, there was a negative relationship between the time spent in pullout and posttest in all cells. When the non-pullout students were excluded from the analysis, the results completely changed. There was a positive significant relationship between pullout and posttest in all cases except third grade reading. (p. 568)

Table III-2

Various Perspectives on the Pullout Findings
of the Instructional Dimension's Study[1]

(1) NIE's Perspective

	A	
	Reading	Math
Grade 1	I+	I+
2	ND	P+

Based on NIE (1977)

	B	
	Reading	Math
Grade 1	I+	I+
3	I+	ND

Based on Frechtling & Hammond (1978)

(2) LRDC's Perspective

	C	
	Reading	Math
Grade 1	ND	ND
3	I+	ND

Based on Cooley & Leinhart (1980)

	D	
	Reading	Math
Grade 1	P+	P+
3	ND	P+

Based on Leinhart & Palley (1982)

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[1] The Instructional Dimensions Study was commissioned and monitored by NIE and conducted by the Learning Research and Development Center at the University of Pittsburgh.

Key: I+ = in-class students outperform pullout students
P+ = pullout students outperform in-class students
ND = no difference

By way of explaining differences across the two analyses, Leinhardt and Palley (1982) offer the following:

> The most plausible interpretation of these results is that the non-pullout students had more academic knowledge than the pullout students, that is, the poorer students were chosen for pullout. Hence, pullout was associated with less achievement because it had less able students and not because it was an inferior practice. Pretest did not adequately adjust for all the initial differences. In this case, the underadjustment would be particularly faulty for the first grade since (as Glass & Smith, 1977, pointed out) the pretest was not a good measure of initial abilities. Examining the results with the non-pullout students removed, we see the following: Pullout is still associated with less gain in third grade reading but not in the other three cases. Overall, the more time a student spent in the segregated pullout class, the greater the gain. It seems likely that effective practices were being implemented in these settings. It cannot be determined whether students who were pulled out suffered some initial losses due to having been removed from the regular class. We can say that once pulled out, they increasingly gained from more pullout instruction. (p. 568)

Prior to these reanalyses, Glass and Smith (1977) looked at the results of both the IDS study, as reported by NIE, and the ESAA evaluation and found that the ESAA study provided a better data base and more believable evidence for assessing the effects of pullout. Their review of the ESAA findings led them to conclude that there was a consistent negative relationship between the percentage of time pupils spend in the pullout setting and their mathematics and reading achievement. They also concluded that, "pupils pulled out of their regular classrooms would have to receive remarkably effective compensatory programs to offset the potential risks incurred. In our opinion, the 'pulled out' pupil is placed in moderate jeopardy of being dysfunctionally labeled, of missing opportunities for peer tutoring and role modeling, and of being segregated from pupils of different ethnic groups" (p. 41). Finally, they concluded that the "pulled out" procedure per se had no clear academic or social benefits and may, in fact, be detrimental to pupils' progress and adjustment to school.

From their paper, it appears that Glass and Smith were willing to base their conclusions about pullout on the results of a single study. Obviously, other studies influenced their decision, as suggested by their review of the impact of variables such as ability grouping, labeling, peer tutoring, racial desegregation, and mainstreaming the handicapped. But, it appears that the ESAA findings were the sine qua non of their argument. With these findings in hand they could argue that pullout is not only ineffective in improving achievement but that it also produces harmful labeling of students, it serves as a means for resegregating students, and so forth. But is pullout truly ineffective in improving achievement? The reanalyses of the IDS data argues that it is not, and, based on these new findings, it appears that Glass and Smith (1977) may have been too negatively disposed to the impact which pullout has, at least on achievement. But, at the same time, the reanalyzed IDS data do not suggest that pullout is the best method for improving the achievement of compensatory education students. Rather, they seem to suggest that pullout is one method that should be considered. Cooley (1981) captures the essence of these mixed reactions: "No doubt there are schools in which the pullout practice is being done well, but there are certainly schools in which this may be doing more harm than good" (p. 300).

More recently, a few studies have looked at the impact of pullout on achievement, but, with one exception, these studies are much narrower in scope and in significance than those reported above. Consequently, they do little more than add fuel to the setting debate fire. Nonetheless, they are worthy of consideration, and we turn now to a brief discussion of them.

The Sustaining Effects Study did not directly address the question of the impact of pullout on achievement. However, Carter (1984) did conclude that pullout was the most typical mode of instruction in Title I programs and that Title I did make a difference in achievement, if only for moderately academically disadvantaged students. It could be argued that Carter thus indirectly concluded that pullout has some effect on achievement. However, as is increasingly the case in the literature, Carter was more interested in describing the effect that particular classroom practices had on achievement rather than discussing the effect of setting. Those variables which his research found to be important were opportunity to learn, lower student-staff ratio, allocation of teachers' time, classroom management practices, source of student off-task behavior, supervision of students, and coordination of instruction. He also found years of teaching experience and the instructional leadership of the principal to be important variables. We will return to a discussion of these issues in a later section.

Yap (1983) also addressed the question of pullout in his secondary analysis of data acquired over a three year period (1978 to 1981) throughout the state of Hawaii. His research yielded few examples of statistical significance, but he did find a trend indicating the superiority of pullout. He also found some significant interactions between grade level and setting, but such effects were generally not substantial. Thus, he concluded that in terms of achievement gain, students who received Chapter I instruction in the pullout setting are likely to perform as well as, if not better, than their counterparts in other settings. He also concluded that despite some drawbacks the pullout setting was a viable option for providing services to Chapter 1 youngsters.

In a 1985 article, Yap also argued for the cost effectiveness of the pullout approach. Using the data described above, he found that pullout produced a unit of normal curve equivalent (NCE) gain for every $81 spent. Corresponding figures for in-class and combination programs were $84 and $86, respectively. These findings disagree with those of Dieneman, Flynn, and Al-Salam (1974) who reported that the per-pupil cost of remedial instruction in the pullout setting is roughly twice the cost of such instruction in the regular classroom. They also disagree with the more recent findings of Fitzgerald and Hunt (1985). In this study of about one-third of the school districts in Minnesota, both pullout and in-class settings were found to be equally effective in producing student achievement gains. However, the pullout setting was found to be more costly and to show a trend toward lower cost-effectiveness than in-class instruction. Unlike Dieneman et al., Fitzgerald and Hunt argue that these increased costs for pullout might be due to the use of licensed teachers in pullout settings and teacher aides for supplemental in-class instruction.

Nearine and Pecheone's (1984) study of the Intensive Reading Instruction Team (IRIT) program implemented in Hartford, Connecticut also reported positive effects for pullout, as did Knight's (1979a, 1979b, 1979c) studies of selected schools in New York City. In the Knight studies, however, weaknesses in experimental design render the results suspect. Finally, Madhere (1981) reported that pullout was more effective than in-class instruction in improving student achievement. In discussing the results of this study Madhere offers two explanations for the effectiveness of pullout: (1) it may reflect a more systematic effort in designing and following the remedial instruction sequence; and (2) it may result from teachers' familiarity with the approach since it has been the predominant mode of compensatory instruction over the years. Madhere also argues that pullout appears to be most effective in an environment where the Title I pupils constitute a majority of the students in the school. He contends that in such a context, the impact of labeling a student in need of assistance, a negative consequence according to the critics of pullout, may also be meaningless.

Doss and Holley (1982), on the other hand, reported that pullout programs were not effective. They argued that compensatory programs conducted during the regular day inevitably supplanted regular instruction. They also argued that one of the reasons for the ineffectiveness of pullout programs was the regular classroom teacher's decreased sense of responsibility for the special program student. Finally, and based on Glass and Smith's (1979) meta-analysis of class size and achievement, they argued that reducing class size to 15 and delivering instruction within the regular classroom would not only redress some of the problems occurring within pullout programs but also improve student performance. Since this approach was permissible under the "school-wide projects" provision of Title I in force at that time, such a program was implemented on a pilot basis in 1980-81 in two Austin, Texas elementary schools. Analyses were conducted on reading and mathematics achievement for students in grades 2 through 6 in those schools and in certain Title I schools using pullout programs. From these analyses, Doss and Holley concluded that in most school-wide projects students outscored Title I regular students of the same pretest level and that in most cases the impact of the school-wide projects was uniform across all levels of the pretest. On average, the advantage of the school-wide projects across grades were 2.1 months in reading, 2.5 months in language arts, and 2.2 months in mathematics. However, these gains were purchased at such great expense ("lowering the PTR [pupil-teacher ratio] from 25-1 to 15-to-1 would increase personnel costs by 67 percent in the schools and grades where applied" (Doss and Holley, 1982, p. 10)) that the project had to be discontinued after about two years of operation. Levine and Stark (1981) report that the school-wide projects implemented in the Los Angeles Unified School District suffered a similar fate partly because they were very expensive and partly because there were questions about how well they worked.

What, then, can we say about the effect of pullout on achievement? Based on the research that has been conducted to date, we cannot conclude with confidence either that pullout is more effective than in-class instruction or that the opposite is true. We also cannot conclude that one or the other of these approaches is more cost effective. We can conclude, however, that the achievement findings provide little support for the overwhelming, and in some locations almost exclusive, use of the pullout model. Rather, the findings suggest that both pullout and in-class instruction can be effective, given appropriate circumstances, and, as reported by Carter (1984), Leinhardt and Palley (1982), Tobias (1982), and others, it is likely that these circumstances, particularly the type and quality of the instruction delivered within an instructional setting, are more important than the setting itself. Despite this general sense, however, it must be reported that pullout programs have been found suspect for reasons other than their impact on achievement. Thus, before considering the types of variables which should be emphasized in any instructional setting, we turn to a discussion of additional issues and concerns about the setting for instruction.

Other Effects of Instructional Setting

In addition to achievement findings, the literature also includes an increasing amount of other information on the effectiveness of in-class versus pullout programs. Included among the long list of issues which have been addressed are the following: (1) the stigma associated with receiving Chapter 1 instruction, particularly in a pullout setting; (2) the levels of communication, cooperation and coordination possible in the two settings; (3) the levels of teacher autonomy and control afforded by the settings; (4) the amount and type of content lost when compensatory instruction is received, particularly in pullout programs; (5) grouping patterns, individualization and segregation in in-class and pullout settings; (6) the relationship among peers and the opportunity for peer tutoring; and (7) the types of instructors and their roles in different settings. Some of the data bearing on these issues have been presented earlier in this paper, particularly in the section describing the nature of compensatory instruction. Additional data will be presented below. In either case, much of what we know about these issues is derived from relatively small scale observational studies, studies of relatively modest scope reporting on the results of interviews with program students, teachers and administrators, and somewhat narrow surveys of the perception of these and other groups. Moreover, and as was the case with the review of the impact of setting on achievement, the data which are available are generally equivocal.

Stigma

Leinhardt and Pallay (1982) reported that despite contrary research findings special educators strongly believe that special placement makes the target child feel rejected rather than rescued. Likewise, many educators believe that compensatory education students are likely to feel different if they are labeled as Chapter 1 eligible and are pulled out of their regular classrooms for special instruction (e.g., Leinhardt and Pallay, 1982; Shuy, 1978; Glass and Smith, 1977. Some argue, on the other hand, that stigmatization occurs in mainstream programs as well (Noddings, 1978). On this score, at least one author has suggested that stigmatization may be greater in the mainstream setting since in this environment compensatory education students are both singled out and remediated in front of their classmates (Hayes, 1983). From a slightly different perspective, it has also been argued that pullout is an effective instructional strategy in an environment where Chapter 1 students constitute a majority, and that, in such settings, labeling may be meaningless (Madhere, 1981).

Even though the research evidence is inconclusive, it appears reasonable to argue that stigmatization occurs in both in-class and pullout settings: in the in-class setting because students receive extra instruction in front of their peers and in the pullout setting because students are easily identifiable. It also appears that it is not the setting itself that aggravates the feeling of being different, but the sensitivity or insensitivity of teachers operating within the setting (Noddings, 1978). Kennedy's (1978) advice on this issue seems particularly compelling:

> Compensatory education students are less likely to be subjected to labeling and its negative effects in environments where teachers actively encourage children's respect for and appreciation of a variety of human differences; in environments where similarities between learning tasks and materials are emphasized; and in environments where Title I and non-Title I children frequently move, in an organized way, to other parts of the building or classroom to receive special instruction. (p. 35)

Communication, Cooperation, and Coordination

One of the most frequently cited advantages of the in-class setting is the increased communication, cooperation, and coordination among regular classroom and compensatory education instructors that it affords. Advocates of in-class instruction argue that, because specialist teachers or aides hired with compensatory education funds provide their instruction in the same classroom as the regular teacher, there will be increased interaction and cooperation in planning for instruction (Bean and Eichelberger, 1985; Kennedy, 1978; Hayes, 1983; Neumann, 1985), better integration of remedial and regular instructional strategies (Kaestle and Smith, 1982; Allington, in press; Bean and Eichelberger, 1985), better opportunities for individualization and small-group instruction, (Bean and Eichelberger, 1985), and a better flow of information on student progress (Harnischfeger, 1980). There will also be fewer disruptions caused by students moving in and out of the regular classroom (Hayes, 1983), and thus more continuity in instruction, as well as an increased opportunity for regular classroom teachers to observe other, and perhaps more effective, approaches for working with compensatory education students (Kennedy, 1978).

Allington (in press) has offered some particularly powerful comments on one of the consequences of pullout, namely the fragmentation of instruction. He suggests that pullout remedial reading instruction is typically independent from the reading instruction offered in the regular classroom and that it generally employs different materials and teaching methods. He argues further that neither the classroom teacher nor the compensatory education specialist is likely to know what type of instruction the other is offering. Consequently, he claims that few remedial students actually receive instruction that supplements their core curriculum; rather they are taught by classroom and remedial teachers who express different beliefs about student needs, offer different objectives as targets for instruction, and use reading material that represent distinctly different models of the reading process. As a result, he argues, students who are in need of remediation are offered instruction that seems likely to increase their confusion rather than reduce it. Allington, however, also acknowledges that pullout programs can offer a "congruent instructional setting", and, therefore, that the incidence of separate curricula must be related to factors other than the instructional setting itself.

Despite this strong indictment of pullout programs, it appears that in-class programs also present problems, and further, that some are the same as those prevalent in pullout settings. Bean and Eichelberger (1985), for example, noted differences in classroom teachers' and specialists' teaching styles and instructional strategies when a large city school district changed from a pullout program to one in which specialists worked in the regular classroom. Moreover, although teachers in this new program reported increased interaction and cooperation, they also reported problems with scheduling and inadequate joint planning time; reading specialists, on the other hand, reported that there was a lack of teacher interaction, that they were not sure what their role was in the classroom, that they had insufficient materials, and that there was inadequate management. Bean and Eichelberger (1985) concluded that these problems were due to two teachers sharing the same room and that, despite the in-class arrangement, teaming was difficult. Vasquez and Nuttall (1983) reached similar conclusions. These researchers also argued that it is the classroom teacher, not the specialist, who is forced to schedule activities that will accommodate another class in the same room and that the coordination between the regular and compensatory program is still accomplished outside of the regular classroom, before school, during recess, during lunch, or after school. They argued further that even though the materials used in the regular and remedial programs are more likely to be similar in in-class programs, pullout programs use a greater variety of instructional materials. Specialist teachers working in the regular classrooms apparently find it difficult to transport books and other paraphernalia from classroom to classroom (Bean and Eichelberger agree), find it harder to use audio-visual materials because they would be distracting to the regular classroom teacher, and, for that same reason, avoid materials that require recitations or other "out-loud" work. Despite his enthusiasm for the in-class approach, Neumann (1985) concluded that where this type of setting is used specialists must be highly organized, must be flexible enough to work in several environments, and must have the diplomacy and personality needed to work jointly with colleagues.

Taken together, these results suggest that even though in-class programs offer the opportunity for increased communication, cooperation, and instructional continuity, they do not ensure that they will occur. Perhaps, as suggested by Kennedy (1978), the key to good coordination between compensatory and regular instruction is not the setting for instruction but rather the quality of the joint planning that occurs, the amount of decision-making power given to teachers and specialists by their respective administrators, and the flexibility in scheduling. Whether these characteristics occur more frequently in in-class settings remains to be seen.

Teacher Autonomy and Control

Critics of the pullout model have argued that when students receive remedial instruction outside the regular classroom neither the regular teacher nor the compensatory education specialist is willing to accept full responsibility for the students' progress (Allington, in press; Doss and Holley, 1982). If they so desire, classroom teachers can claim that less than acceptable progress is attributable to shortcomings of either the student or the compensatory instruction; compensatory education specialists, on the other hand, can attribute such a result to either the student or inadequate regular classroom instruction. To avoid such academic finger-pointing, some have argued that the adoption of the in-class model would allow the teachers sharing the same space to share this responsibility or the administrators coordinating the program to decide on whose shoulders the responsibility should lie. Despite the wisdom of this argument, however, it appears that the adoption of an in-class arrangement will again not ensure the expected outcome. Bean and Eichelberger (1985), for example, reported that both teachers and specialists had problems with two instructors in one room and that the problem of leadership or control was a real issue. Vasquez and Nuttall (1983) reached a similar conclusion, as did Shuy (1978), who found that some of the teachers in the Instructional Dimensions Study favored pullout because it gave them greater autonomy. On the other hand, Shuy also reported that some teachers favored the in-class approach because it gave them more control. Unfortunately, the literature does not allow one to resolve this apparent conflict.

Content Lost

It was argued earlier in this paper that students receiving compensatory instruction in a particular content area (e.g., reading) do so at the expense of regular instruction in that same content. Harnischfeger (1980) concluded that pullout pupils "often receive less reading time than the rest of the class because the pulling out--going some place and coming back--also entails loss of instructional time for students who need more" (p. 4). Regardless of whether this is true, and there is some evidence to suggest that the total time allocated to basic skills instruction is greater for compensatory education students than for their non-compensatory education peers (Archambault and St. Pierre, 1980), the implication is that some approach other than or in addition to pullout would be more effective. Harnischfeger's solution would be to lengthen the school day for compensatory education students. Others argue that providing in-class instruction would solve the problem because then the time lost by traveling from place to place would be retained. Allington (in press), for example, suggests that as much as 15 minutes per day, or 40 hours per academic year, might be saved in this manner. However, neither Allington nor anyone else that this reviewer has been able to uncover provides direct evidence on what would actually be done with the newly found time were compensatory instruction to be provided in-class. Would the interruptions prevalent in in-class programs (Hayes, 1983) prove to be less troublesome than the disruption associated with pullout programs? Would the presence of more than one teacher in a single classroom result in greater confusion than occurs in pullout programs, particularly when such programs are adopted on a wholesale basis? Additional research is needed before we can determine with any confidence whether in-class compensatory education programs result in more or less time allocated to instruction. Additional research is also needed to determine whether such differences in allocated time are accompanied by differences in the amount of time which students in various settings actually engage or actively participate in instruction.

Grouping

Compensatory instruction is delivered in smaller classes and groups than regular classroom instruction. It is also more likely than regular instruction to incorporate components of individualized instructional programs. Pullout instruction, which comprises the large portion of compensatory instruction, is delivered in groups that are more homogeneous in ability than those in the classrooms from which compensatory students are removed. Do the reductions in class and group size and the increase in individualization of instruction have a positive affect on students? Is homogeneous ability grouping preferred to heterogeneous ability grouping? We turn now to a discussion of these issues.

Glass and Smith (1979) reported that achievement is higher in smaller classes, particularly in those with 15 or fewer students. Since the average class size for compensatory instruction in reading, language arts, and mathematics is below 14 while the average size of the regular classroom is 27, it would appear that on achievement grounds alone smaller class sizes would be preferred. Moreover, if students in these smaller classes, which are really pullout classes, are also receiving more individualized instruction, then the case for pullout instruction would appear to be even stronger. Before we leap to this conclusion, however, we should review what other researchers have to say on this issue.

Cooley and Leinhardt (1980), for example, have reported that the Instructional Dimensions Study did not provide any clear evidence for the superiority of individualized instruction over other methods of compensatory education. Their review of the literature also suggested that this result was consistent with other attempts to establish the effectiveness of individualized instruction. In addition, these researchers also failed to find a consistent relationship between class size and achievement. They concluded that "large classes may make the environment less pleasing and work conditions less tolerable, but they do not systematically detract from learning (at least, within the bounds of the class size in these samples)" (p. 21). Harnischfeger (1980), taking a somewhat different view, reported that, even when class sizes are reduced drastically, many teachers do not significantly change their teaching strategies. She suggests that the only consequence of smaller class sizes is smaller subgroups but not fewer groups, and, on the average, no increased teacher-pupil interaction. Harnischfeger goes on to argue that instead of a teacher working with small groups, one at a time, while the rest of the class is on their own, he or she should consider whole class instruction. If they do, Harnischfeger argues, their students will benefit by receiving more direct instruction.

Taken together, these results suggest no clear-cut advantage for either smaller class sizes and individualized instruction or for pullout programs. Unfortunately, the recent literature on ability grouping is also confusing and contradictory. Glass and Smith (1977) concluded from their review of the literature that ability grouping is not an important variable in itself and that it is worth considering only as it relates to or potentiates other changes in instructional activities. They go on to conclude, however, that "the accumulated research literature of several decades shows such an unstable pattern of what takes place between teachers and pupils in homogeneous as opposed to heterogeneous classrooms that no generalizations are possible (or useful) about the effects of ability grouping" (pp. 34-35).

Based on their review of the ability grouping literature, Leinhardt and Pallay (1982) concluded that while there is a trend toward negative effects of isolated settings for low-ability children, it is neither strong nor highly consistent. Some of the studies they reviewed showed favorable results of tracking for low-ability students; many showed mixed results.

Aside from these issues, the removal of the children from regular classrooms for compensatory instruction creates the possibility of resegregation. On this score, Glass and Smith (1977) have argued that pullout programs do not alter the racial mixture of schools but they may and probably do change the racial composition of the classes within them. Eyler (1982) is less equivocal. Citing the work of Hinkley, Beal, and Breglio (1978) and Brookover, Brady, and Warfield (1981), she argues that minority students receive larger amounts of compensatory instruction than non-minorities and that they are typically pulled out of less segregated classrooms and sent to more segregated special rooms to receive their instruction. Citing the work of Kimbrough and Hill (1981), Eyler argues that the potential for resegregation through compensatory services is exacerbated in schools that operate more than one categorical program and have substantial numbers of students who are eligible for more than one type of service. She also argues that the negative effects of resegregation are not offset by pullout's effects on achievement. To avoid problems created by pullout, Eyler recommends that compensatory services be delivered in-class by specialists who act as consultants rather than simply as subject matter specialists. In this redefined role they would serve as resources to the regular classroom teacher rather than instructors of specific groups of students. They would assist teachers in assessing specific learning problems and preparing individual learning plans, train classroom aides and parent volunteers, and help the principal plan the school-wide instruction program.

On the question of race relations, Slavin (1979, 1980) and Slavin and Madden (1979) reported that both working together on school projects with a student of another race and competing together on interracial sports teams had strong positive effects on racial attitudes and behaviors. However, teacher workshops, minority history, multiethnic texts, biosocial student advisory committees, and similar school programs made no difference in racial attitudes or interracial friendships. Given these results, it would appear that if pullout programs do lead to resegregation, as Eyler (1982) and others have argued that they do, the resultant reduction in contact between minority and non-minority students will reduce the possibility of improved relations among the races. To the extent that this occurs, it must be viewed as a serious negative consequence of the use of the pullout model.

Peer Tutoring and Cooperative Learning

Levin, Glass, and Meister (1984) report that cross-age tutoring has a long, informal history in American education. Citing the work of Ehly and Larsen (1980), they report also that peer tutoring can result in achievement gains, increases in self-esteem, and enhancement of academic motivation, and that often these effects can be found for both tutor and tutee. Peer tutoring programs are said to work because the tutees are motivated to model the tutor's behavior, and because tutees feel more relaxed with a child tutor, and therefore better able to concentrate.

In their own research Levin, Glass, and Meister (1984) compared the cost effectiveness of peer tutoring programs to three other interventions: reducing class size, increasing the length of the school day, and computer assisted instruction. For the peer tutoring arrangement, upper grade students tutored second and third-grade children needing help in reading and math. The overall effects of peer tutoring were found to be "substantial, with average effect sizes of .97 and .48 for mathematics and reading, respectively" (Levin, Glass, & Meister, 1984, p. 14). With regard to cost effectiveness, the peer tutoring approach was also found to show the best results of the four interventions. In fact, these researchers found that the same cost outlay would provide almost four times as large an effect on reading and mathematics achievement through peer tutoring as through reducing class size or increasing instructional time. Adult tutoring was also found to be a cost effective strategy.

What implications do these results have for the comparison of in-class versus pullout programs? Glass and Smith (1977) suggest that instruction of compensatory pupils in pullout settings reduces the opportunities for faster pupils to tutor slower pupils that could exist in integrated classes. They conclude: "to the extent that peer tutoring is a part of regular classroom instruction its benefits could be foregone in a pullout organization" (Glass & Smith, p. 36). The validity of this argument appears to turn on the phrase "to the extent that peer tutoring is a part of regular classroom instructions its benefits could be foregone in a pullout organization" (Glass & Smith, p. 36). As noted above, the peer tutoring approach described by Levin, Glass, and Meister (1984) did not rely on tutors drawn from the same classrooms. Rather, peers were older students in the same school. Thus, it would appear that pullout programs do not preclude the possibility of peer tutoring. However, the research that is available at this time, does not allow one to determine whether in-class peer tutoring arrangements would be more effective than those offered in a pullout setting.

Type of Instructor

The final issue to be addressed in this portion of the review is the effect which various types of instructors have on both the instructional setting and performance of students. This issue is important not because certain categories of instructors can function in only one setting. Clearly, instructional specialists and aides, who are responsible for the large majority of compensatory instruction can function in either pullout or in-class settings. Rather, it is important to review the effects which these two types of instructors have independent of setting and to consider whether the roles which they have grown accustomed to playing will have to change if they are asked to move from a pullout setting, where most of them now labor, to the in-class setting.

As noted earlier in this review, instructional specialists provide the large majority of compensatory instruction. Generally, these specialists have a higher level of educational attainment than regular classroom teachers. In general, they also have less experience, and, because of this, they are also likely to receive less pay. Despite the widespread use of these better trained but less experienced teachers in compensatory education programs, the literature tells us surprisingly little about the effect which they have on students. Glass and Smith (1977) report on two studies which claim to show that remedial reading specialists have a positive effect on reading performance (Kiesling, 1971; Flynn, Hass, Al-Salam, 1976). However, neither this review nor the one reported here was able to uncover any additional information on this issue. Perhaps because of this lack of information, Lignon and Doss (1982) have suggested that compensatory funds be used to purchase additional classroom teachers rather than reading specialists, thereby reducing the size of the regular classes. Allington (in press), on the other hand, believes there is a ample support for the continued use of reading specialists. He does feel, however, that reading specialists will be under increasing pressure to justify their positions, particularly to their classroom teacher peers.

Concerning the nature of their services, Eyler (1982) has suggested that the role of compensatory instructional specialists should be redefined to require them to work in in-class settings and serve as resources to the classroom teacher rather than an instructors of specific groups of students. Interestingly, Bean and Eichelberger (1985) have reported that reading specialists perceived that they placed less emphasis on both diagnosis of student weaknesses and teaching specific skills and more emphasis on working with content teachers when their school district changed from a pullout to an in-class approach. Classroom teachers concurred with specialists and also reported that specialists spent more time working with them. Despite the similarity between what Eyler (1982) proposed and what actually occurred in the Bean and Eichelberger (1985) study, the latter authors reported that teachers and specialists both agreed that reading specialists should focus on working with students with reading problems. Neither group saw the reading specialist as a resource to the classroom teacher, although both groups valued having interaction about specific children.

Shifting our attention to instructional aides, Scheutz (1980) suggested that the evidence about their effectiveness is mixed. Qualitative studies have found that teachers using instructional aides spend more time on instructional activities, deliver more of their instruction in individual and small groups, feel they accomplish more, and feel that instructional aides are helpful. Quantitative studies of their impact on student achievement, however, are less conclusive. In fact, Scheutz reports positive, negative, and no effects attributable to instructional aides in her comprehensive review of the literature. Despite the lack of convincing evidence for their effectiveness, Scheutz provides useful information on the conditions which must be satisfied if aides are to be helpful: (1) teachers who use instructional aides must be genuinely receptive to them; (2) instructional aides must have the necessary literacy and computational skills to perform some useful instructional tasks in the classroom; (3) classroom management plans must be developed to take advantage of the presence of instructional aides; and (4) instructional aides must receive intensive training in the tasks they will be asked to perform.

Viewed as a whole, the literature concerning the impact of specialist teachers and instructional aides on student performance does little to support the case for either pullout or in-class programs. This conclusion may not be surprising, since by this time in the review most readers may have grown accustomed to equivocal results. What may be surprising, however, is the lack of evidence about the effectiveness of instructional specialists and instructional aides regardless of setting. Perhaps Allington (in press) is right in arguing that reading specialists will be called on increasingly to justify their positions. Whether he is or not, research clearly needs to be performed to determine exactly what impact reading specialists have on student performance and whether the continued use of compensatory educations funds to purchase their services is warranted.

Conclusion

The literature on the effect of different instructional settings leads to some firm conclusions, but more generally it leads to insufficiently tested hypotheses about what will or will not improve the performance of compensatory education students. The literature does show that Title I funds were used primarily for instructional services, particularly reading, language arts, and mathematics, and that the major portion of this instruction was delivered in a pullout setting. It also shows that this instruction was provided by instructional specialists, and to a lesser extent instructional aides, who worked with small groups of children and provided more individualized instruction than regular classroom teachers. Although national data on the types of services delivered through Chapter 1 are not yet available, it appears that pullout instruction is still the favored approach. It also appears that the in-class approach is being used more frequently. Critics of pullout have argued that it achieved popularity because it provided clear evidence that districts were complying with Title I regulations, particularly the supplement-not-supplant and the excess costs provisions. Since Federal authorities have specifically suggested under Chapter 1 that models other than pullout should be considered, there is reason to suspect that the use of in-class approach, or perhaps some combination of in-class and pullout approaches, will continue to rise. But is either the in-class or pullout approach preferred on pedagogical grounds?

The research describing the impact of pullout programs on student achievement is generally confusing and often contradictory. In fact, based on what we know at this time, one would be unable to provide convincing evidence for the effectiveness of either strategy. Given these mixed results, one could argue that the widespread use of pullout programs is not justified. Moreover, since there is some evidence to suggest that pullout may result in resegregation, there is further reason to question its widespread use.

Critics of pullout have also suggested that it unnecessarily labels and stigmatizes students, that it reduces communication, cooperation, and coordination between regular and compensatory instructors, that it reduces teacher responsibility for pupil progress, and that valuable content is lost when pullout instruction is received. Despite the value and importance of these criticisms, however, counterarguments also appear to have some value. Labeling and stigmatization can occur in in-class settings as well as in pullout settings. Moreover, it may be that it is not the setting itself which aggravates a compensatory education student's feelings of being different, but the sensitivity or insensitivity of teachers operating within the setting (Noddings, 1978). It also appears that even though an in-class program makes it easier and more likely for communication, cooperation, and coordination to occur, it does not guarantee that they will. Additionally, there is some evidence to suggest that certain types of teachers are just not able to work together in a single classroom and that joint planning may take place in much the same way in in-class programs as in pullout programs, before school, during recess, during lunch, and after school. Because some teachers may not be able to accommodate another teacher in the same classroom, the issue of teacher autonomy and responsibility for student progress is also not automatically resolved by in-class programs. Perhaps, as suggested by Kennedy (1978), the key to good coordination between Chapter 1 and regular instruction is not the setting for instruction but rather the quality of the joint planning that occurs, the amount of decision-making power given to teachers and specialists by their administrators, and the flexibility in scheduling allowed by the environment.

With regard to the content lost issue, it is clear that some instruction is sacrificed when pullout compensatory instruction is received. It is also clear that valuable instructional time is lost in the process of moving to and from the pullout environment. It is not clear, however, what types of instruction, if any, would be lost if compensatory instruction were delivered in-class. It is also not clear whether the interruptions resulting from students being pulled out for instruction are less harmful than the confusion resulting from two teachers working in the same classroom. More research needs to be done on these issues.

Bowing now to the other side of the aisle, those who favor pullout programs herald the virtues of instructional specialists and the opportunities for small-group instruction which they afford. Unfortunately, the literature does little to resolve the long term debate on these important issues. Surprisingly, we know very little about the impact which instructional specialists or aides have on student performance. Thus, we are not sure whether it would be preferable on pedagogical grounds to eliminate specialists and aides and use the released funds to reduce class size (Lignon and Doss, 1982). Further, since the in-class models which are being implemented use instructional specialists or aides as service providers, the type of instructor clearly does not distinguish the two approaches. It does appear, however, that the groups involved in in-class and pullout programs have been and will continue to be different. The group sizes for pullout programs have been appreciably smaller than the class sizes in which pullout students receive their regular instruction. Moreover, individualized instruction has been more prevalent in pullout programs. Were instructional specialists and aides to be shifted to the regular classroom, however, these "advantages" of pullout would most likely be lost. Regarding these "advantages", however, it must be reported that the literature on the former is mixed while the literature on the latter indicates that individualization may not be a key variable in our understanding of the instructional process.

Despite all of its confusions and contradictions, the literature does offer some reasonable advice to those charged with the delivery of compensatory instruction. Based on what we know at this time, it is safe to conclude that setting is not directly responsible for student outcomes and that it is "the issue of effective practices, not setting, that deserves the attention of educators" (Leinhardt & Pallay, 1982, p. 557). This implies that they will have to consider, perhaps more seriously than in the past, what goes on within these settings and how regular and compensatory instruction can be woven together to improve student performance.

Like Allington (in press), it appears reasonable to conclude that the effective schools literature stimulated by the work of Edmonds (1979), Brookover et al. (1978), and others would be a good starting point for this renewed emphasis on effective practices. Districts and schools must be committed to the instructional models and programs they adopt, there must be agreement on goals and objectives, principals must assume a leadership role in the determination of what instruction should be offered, how it should be delivered and whether or not it is delivered, administrators and teachers must have high expectations for their students and must communicate these high expectations to them, there must be frequent monitoring and feedback of student performance, and there must be effective teacher training. In addition to these issues and concerns, the following variables or conditions of learning described in Leinhardt and Palley's (1982) excellent review should be emphasized: (1) small class sizes; (2) large content overlap between teaching/learning activities and criterion tasks; (3) mastery learning, meaning clear goal statements and regular monitoring of student progress; (4) increased time spent in cognitive activities; (5) reasonably rapid pacing of instruction; (6) using a formal management system which encourages task orientation and successful completion; and (7) increased teacher instructional time. With increased attention to these issues and concerns, and with improved cooperation between regular and compensatory instruction, it is possible that future evaluations of compensatory education will be able to present less equivocal and more positive results than have been found in the past.

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PROGRAM AND STAFFING STRUCTURES: REACTIONS FROM A QUARTER-CENTURY WORKER IN COMPENSATORY EDUCATION

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PROGRAM AND STAFFING STRUCTURES: REACTIONS FROM A QUARTER-CENTURY WORKER IN COMPENSATORY EDUCATION

For more than 25 years I have been professionally involved in one way or another with teaching the children of poverty. In September, 1960, I began my own teaching career in Corpus Christi, Texas, with 25 middle- to low-achieving minority students; by Thanksgiving, 22 migrant students had joined the class. New and inexperienced, I had no idea what had happened. Since 1970 I have been involved in one way or another in program development and research related to Title I and its descendants. Today, in secondary education I am heavily involved in trying to define or design programming to prevent school dropouts--the ultimate place we wind up after massive failures to deal effectively with teaching the disadvantaged.

Parallel to this interest has been one in the research on teaching effectiveness. With the University of Texas Research and Development Center on Teacher Education conducting its research in the Austin schools, I had the opportunity to observe and at times participate in the work of the Center with researchers such as Jere Brophy, Carolyn Evertson, and Gene Hall.

Thus, over the past 25 years I have read much of the literature on both compensatory education and teaching effectiveness. Out of these years of practice, research, and reading I have distilled a number of convictions about educating the students of poverty. I have reviewed the papers in this session from this background and will eventually relate what I see there to those convictions. Let me first comment on the papers.

Harris M. Cooper's Paper: Chapter 1 Programs Reduce Student-to-Instructor Ratios But Do Reduced Ratios Affect Achievement?

Cooper's paper states its purpose as an examination of the research on how student-to-instructor ratio effects influence schooling, with particular attention to how the research relates to low-achieving children. Both class or group size and time-on-task are considered. The paper relies chiefly on conclusions of existing reviews of the literature rather than undertaking a new synthesis of the literature itself.

The paper begins with the first review related to the impact of class size on achievement which was conducted before the turn of the century and considers others which have followed with the rising and falling interest in class size since that time. The paper then devotes considerable attention to the Glass and Smith (1978) meta-analysis and the subsequent exchanges about that work.

Following this consideration of the relationship between class size and achievement, Cooper turns his attention to the issue of how class size changes may affect the classroom processes. He points out that the Glass and Smith study considers this question only from the perspective of class size differences of 40 and 10, thus being of limited applicability to the usual size class reductions.

Consideration is next given to Cahen's Class Size and Instruction Program study (Cahen, Filby, McCutcheon, & Kyle, 1983) and to the Sustaining Effects Study (Carter, 1984). Here certain enhancements to the classroom are suggested although there did not appear to be an increase in time spent teaching core curriculum material.

Cooper next turns to a consideration of allocated, instructional, and engagement time. Harris concludes that these studies do suggest that compensatory instruction increases the Chapter 1 student time of all three types.

Cooper then takes up the review of studies relating to the relationship between time and achievement. He concludes here that the literature indicates that all three types of time are related positively to learning. He found a general lack of attention in the literature to the relationship between time and attitudes. He goes on to consider that many other classroom variables exist in addition to that of time and points out that the literature would suggest that some of these such as quality of instruction can overwhelm the effects of class size alone.

Cooper concludes then that more is involved in this issue of achievement than class size or learning time.

Francis X. Archambault, Jr.'s Paper: Instructional Setting: Key Issue or Bogus Concern

Archambault in this paper in contrast to that of Harris sets out to do a review of the literature on the effects of pullout versus in-class instruction which he defines here as the effect of instructional setting. To my knowledge this paper represents the most comprehensive review of the literature on this subject. He begins by pointing out that the research has shown quite clearly that Title I provided predominantly pullout instruction and concludes that clear evidence is not present for either pullout or in-class instruction. He delves into the debate over whether Federal guidelines could be interpreted as mandating in fact, if not in direct regulation, that pullout instruction should be the mode for delivering Title I instruction. Having participated in fights at the state level with Title I program staff to attempt variations on the pullout model because of our lack of achievement gains with that approach, I wish to provide testimony that state level staff were indeed mandating the pullout model. Their reasons had little to do with instructional success, but rather with the ease of accounting which came with staff shut into classrooms or cubbyholes in which they had contact only with "Title I children."

Archambault finds the two most important data sets in the debate to be that of the Emergency School Aid Act third year evaluation (Coulson et al., 1977) and that of the Instructional Dimensions Study (National Institute of Education, 1978). Analyses, secondary analyses, and counteranalyses of these data sets had conflicting results. Other studies with similarly inconclusive additive effects that Archambault reviews include the Sustaining Effects Study (Carter, 1984), Yap's (1983) data from the state of Hawaii, Fitzgerald and Hunt's (1985) Minnesota data, Nearine and Pecheone's (1984) Hartford data, and Knight's (1979a, 1979b, 1979c) New York City data.

Having concluded that no conclusion with confidence regarding the effect of instructional setting on achievement is possible, Archambault next turns to the issue of other effects of instructional setting. Here, he touches on the impact of the student's self-concept; the staff's communication, cooperation, and coordination; the teacher's autonomy and control; content; grouping practices; resegregation; and type of instructor. In the studies reviewed with respect to these effects, Archambault at least finds reason to question both in-class and pullout models on one ground or the other.

Archambault concludes his review by stating that "setting is not directly responsible for student outcomes" (p. III-88) and that, as Leinhardt and Palley have said, it is "the issue of effective practices, not setting, that deserves the attention of educators" (p. III-88). He further states that the effective schools literature might be a good place for us to begin. Unfortunately, having also pursued that literature for help, I think the problems he finds with the instructional setting research are dwarfed by the problem with the effective schools research.

Barbara Heyns' Paper: Summer Programs and Compensatory Education: The Future of an Idea

Heyns finds a dearth of systematic information about summer programs, particularly in recent years. She reviews the Sustaining Effects Study (Carter, 1984) as the only national scale scrutiny of summer programs. This study indicated that district size was the best predictor of the availability of summer programs. In general other data available indicates great variability in the availability of summer programs, types of summer programs, and attendance in summer school. Heyns also touches on the recent court decision in Pennsylvania requiring that handicapped students be provided summer programming and the fact that these decisions may ultimately influence the availability for all students. Heyns goes on to look at the testing issue of "summer regression." This is important because it can explain why a summer program which shows no increase in achievement scores can be considered successful, perhaps, because it prevents too severe regression.

The first two reviews are both comprehensive and satisfactory, drawing on the most well known studies related to student-teacher ratios and instructional setting. Neither review taps into the large body of local school district evaluation studies on Title I and Chapter 1 in any real way although some of Austin's American Educational Research Association (AERA) papers relating to those evaluations and several other school district papers are mentioned by each reviewer. Over the years I have worked with the large city research departments, I have listened to and read countless evaluation reports which have contributed again to my own educational convictions which I will turn to in a moment. Nonetheless, I do not believe that a comprehensive review of those evaluation studies would lead to different conclusions than those researched by Harris and Archambault.

Both reviews also touched on areas outside the field of compensatory education leading me to note that one of the great difficulties in drawing conclusions about this field is the fact that any research related to learning, instruction, human behavior, schooling, organizations, society, and countless other areas is equally important to compensatory education. Too often, we tend to overlook that in designing programs or research related to those programs.

Heyns' review simply takes a look at what is available on summer programs and attempts to elicit some kind of sense of purpose for summer schools. This paper also fails to tap into the large number of public school evaluation studies on summer school, but once again these studies would probably not lead to substantially different conclusions. What I found missing in the review, however, was the sense of evaluation against some set of expectations for what summer school might give to poor children. The expectation that summer school ought to bring to bear additional instructional time in the education of poor students to equalize their opportunity is a fundamental premise from which I would begin to design summer programs. Because I have not found summer programs to demonstrate substantial achievement improvements, my own conclusion is that we have not yet been able to design programs that achieve the "additional" education required. Indeed, in my own observations, summer programs have spent more time assessing students than teaching them. Teachers are selected anew each year and must get to know the needs of students before they can provide instruction. I believe the key may either be to provide year-round instruction with the same teacher, thus extending the time of instruction, or providing experiences that truly teach new or additional material. In my own opinion, summer programs are a place in which further experimentation is mandatory.

What Does It All Mean?

The reviews have not altered the convictions which I brought to the study of Harris, Archambault, and Heyns. I think these convictions are important because they are indications of the guides to programming that a practicing educator must of necessity derive from research or research reviews. It is not sufficient for me to conclude that results are ambivalent and to go on designing programming as though I were therefore free to ignore the studies. Indeed, I do not even believe the studies have left us in the same place we were in 1965 prior to Title I in terms of our ability to program for educationally disadvantaged students. What then are the convictions from which I do proceed?

There are no magic answers to compensatory education; huge gains in achievement simply cannot occur. However, from each of many improved practices small gains can be achieved. These are probably not additive, however, and the only substantial gains may be those that occur at the early grades. Early childhood education where programming that is content laden and rich in diverse experiences probably yields the greatest payoff. Small class sizes, effective teaching practices, and teacher understanding of learning principles and language development can each contribute to increased learning. Programs to increase self-concept per se probably hurt more than they help; classroom instruction that succeeds in developing learning skills while demonstrating the teacher's positive expectation of the student's ability to learn is the correct emphasis.

I am also convinced that pullout programs are the wrong way to go. Although Archambault is correct that the literature itself is ambivalent, my own observations in Title I classrooms and in the classrooms of the regular teacher with Title I students overwhelmingly demonstrated to me that children were pulled between different learning philosophies and different reading materials. It was repeatedly demonstrated to me that while coordination was preached and proclaimed everywhere it was rarely achieved anywhere. Unfortunately, I am equally convinced that in-class programming is just as impossible. Again, what I observed was an uneasiness on the part of both Title I and regular staff about sharing classroom and authority. It is no easier and time is no more available for planning between teachers with in-class programs than with pullout programs. Where we mandated in-class programming, we repeatedly saw that as soon as our backs were turned the teachers would see that there was a return to pullout programming. This was a primary reason that I saw the Glass and Smith study as an offering of hope. It suggested that there was still a third way in which we might program classrooms for high achievement. Archambault does not consider this as an instructional programming alternative. Yet this study was a key reason for our experiment with the "school-wide project" in Austin. Its components were not only reduced class size, but equally as important the reduction of outside interferences in one teacher's responsibility for the learning of each student. There were no Title I teachers, there were no Title I aides, there was no Title I curriculum, there were no Title I supervisors. These fit my growing convictions that teacher aides from the neighborhood, too many student teachers or volunteers, an excess of non-sequential program materials or reading systems, and conflicting supervision were all actually leading to decreases in the rate of student learning. In the early days of my experience at trying to program compensatory education, I had bought into the notion that there had to be a "critical mass" of support resources. But it seemed more and more obvious as I watched schools trying to manage an excess of resources that while the theory might have validity, the practice was a disaster. Yet, I could also observe that this was not universal. An excellent principal with excellent management skills could overcome almost any programming we mandated. Leading to my further conviction that there are no absolutes in programming just as there are no absolutes in most other things. Excellence in one area can overcome bad practice in another. Learning is complex; teaching is complex; education is complex.

I attach for you a recent compilation from Austin's Office of Research and Evaluation provided to district administrators as an assist to planning for an anticipated heavy cutting siege on our annual budget. Although no longer under my direction, this office is continuing a tradition of trying to summarize research findings in a way that will impact compensatory and other programming. Across school systems in this country, other offices follow similar practices.

This leads me to a need to state some additional convictions about the impact of Title I requirements on the nation's classrooms that are more subtle than the actual design of the programs.

Accountability

Prior to 1965, the poor child received either the same or, more often, fewer resources than did the middle-class child. Rarely is this true today; through state and local funds the poverty child is usually receiving substantially higher levels of resources. You may recall as I do that some of the first Title I monies were said to have been used illegally in such ways as building a football stadium. This would not happen today because a priority has been created for the educating of poor children.

Systems of district and state testing accountability that owe their origin directly to the requirements of the Federal legislation of the Elementary and Secondary Education Act are now firmly entrenched. As a result few school systems are able to ignore the learning gains of either the poor or any other group of students. This in turn leads to the requirement that compensatory programming either be successful or that it be altered. Moreover, parents are watching this accountability data.

A common attitude in the schools during the early part of the 1960s was that school staff professionals should be left alone by parents to run the schools; parents were regarded as a hindrance. Title I mandates for formal mechanisms to involve parents changed school district thinking about parental and community roles. The required training for the Title I Parent Advisory Committees led to closer examination of school programs by both Title I and other parents. Although a link with today's parent activists and Chamber of Commerce "Adopt-A-School" type programs may not be provable, I maintain that the roots are there and that they have and will make a great difference in the programming we do for all students.

Finally, I have a conviction that somewhere, somehow we missed the boat theoretically in our programming to improve the reading performance of poor children. I have observed program after program "succeed" in teaching children in grade one, and again in grades two, three, and four. Yet children arrive at grades five, six, and later unable to perform. I first felt that something was wrong about this success when I observed a sixth grader reading a passage about "Bel-gum" in his social studies class. Although he could sound out these letters in the best style of his Title I reading classroom, the fact was that this child had not the least concept of the map of Europe or, indeed, of the concepts of oceans and continents. Reading is not pronunciation skills; it is the grasping of meaning and content without which even pronunciation skills well learned will fail. What this child needed was content knowledge. Unfortunately, I am convinced that our Title I classrooms as well as our basal reading methodologies keep from children that greatest of knowledge acquisition methodologies—wide reading. Nor do we take advantage of today's miracle for learning—videotape. The review papers confirm the greater time Title I students spend in language arts instruction, and our Austin time studies documented that this time came from other subject areas. I am convinced that we must get over the notion that programming the reading classroom to achieve success on the primary tests of reading skills is the way to help the poor child. We must turn to designing classrooms that somehow succeed in cramming vast amounts of content in social studies, science, and literature into the child's basic mental storehouse. I believe in the Chomsky vision of the child's mind as an abstracter of rules and principles from broad exposure to samples of language and knowledge. Therefore, it seems to me that the help we need to give future builders of Title I programs should be proposed practices based on better theories of how children learn and how children develop their abilities to think. I am in effect agreeing with the skepticism of Harris and Archambault about whether the classroom variables we are discussing are the real issue.

AUSTIN INDEPENDENT SCHOOL DISTRICT
Department of Management Information

May 6, 1986

TO: Superintendent and Cabinet

FROM: Glynn Ligon

SUBJECT: More Findings of Interest Related to the Budget

In Monday's budget session, a request was made for copies of ORE findings regarding topics being discussed. Attached are brief summaries of the following issues.

1. "Pullouts" and "Overlaps"
2. "Pullout" vs. "Mainstream" Compensatory Education
3. Summer Instruction
4. Early Childhood Education
5. Changes in Early Childhood Programs that Were Related to Evaluation Findings
6. Parent Involvement
7. Happy Talk
8. Math and Reading Rainbow Kits
9. Instructional Aides

"PULLOUTS" AND "OVERLAPS"

ORE Pub. No. 76.62
81.33

MAJOR FINDINGS:

- In 1976-77, AISD students who were served by both Title I and a bilingual program spent significantly less time in reading instruction than did the other groups.
- In 1976-77, AISD students involved in only one pull-out program received approximately the same amount of instructional time as students not served by a pull-out program.
- In 1976-77, students in AISD participated in as many as five special programs concurrently. By 1980-81, the number of students served by more than two compensatory programs had been reduced by 75%.

BACKGROUND:

A larger percentage of Title I students were served primarily in the classroom for 1981-82 than in previous years. It is possible that this change is partially responsible for the program having met or exceeded the objectives at all grade levels except for grade 4.

Glass and Smith (1977) concluded that pull-out programs for Title I students were universal, and that there were no clear academic or social benefits to students from such programs. Such programs "may, in fact, be detrimental to pupil's progress and adjustment to school," the authors concluded.

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Carsrud, K.B. Final technical report: ESEA Title I regular program 1981-82. Austin, Texas: Office of Research and Evaluation (Publication number 81.33), Austin Independent School District, 1982.

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IMPACT ON STUDENTS

"PULLOUT" VS. "MAINSTREAM" COMPENSATORY EDUCATION

MAJOR FINDINGS:

- Pullout has neither academic or social benefits, may be detrimental, and is used to ensure compliance with Title I regulations concerning supplementing as opposed to supplanting regular instruction.
- Pullout appears to be particularly dangerous to children served by multiple programs.
- Children pulled out several times a day are confused by multiple demands and expectations and lose instructional time.
- Students in pullout programs may also suffer from conflict or lack of coordination with the core local program.

BACKGROUND:

In 1978, the National Institute of Education submitted to Congress the final report of a landmark study of the effectiveness of compensatory education programs (NIE 1978). One aspect studied was the relative effectiveness of "pullout" programs, in which children are taken out of their regular classroom to receive supplemental help, and "mainstream" programs, in which they receive this help within the regular classroom.

The study involved 400 classrooms, 100 schools, and 14 districts ranging in size from 5,000 to 240,000 students. The districts were urban, rural, and suburban, contained 4-76% minority students and 42-100% Title I enrollment. Students were measured in reading and math in first and third grades. Findings favored the mainstream setting for all but third grade math, where no difference was found.

A review by the Northwest Regional Educational Laboratory (1981) concluded that

> "Homogenous ability grouping has a negative effect on the achievement, school attitudes, and self-concepts of low-ability students; conversely, heterogenous grouping of these students has a positive effect on these outcomes. The evidence in support of this hypothesis is very strong."

While the NREL review did not look at pullout vs. mainstream progress _per se_, it does suggest that schools should be cautious in singling out low achievers in a conspicuous way.

SUMMER INSTRUCTION

ORE Pub. No. 81.51

MAJOR FINDINGS:

- A large part of the achievement gap between low-income students and others appears to arise during the summer.
- Summer instruction has traditionally been ineffective in closing the gap, and several possible reasons can be hypothesized.
- Summer instruction holds promise for affecting achievement because it provides instructional experiences at a time when none or few are normally provided.

BACKGROUND:

Summer appears to be a crucial time in the education of children from low-income families. These students generally achieve at a lower level than students from families with higher incomes, and the size of the achievement gap increases with each school year. Work by Heyns (1978) indicates that as much as 80% of the increasing gap can be attributed to differences in achievement growth during the summer. During the school year, the rate of growth is about the same for both groups of students. However, during the summer, higher income students continue to gain, but lower income students tend to maintain the same achievement level. As a result, the gap widens. More recent work by Hoepfner (1980) suggests that the school year is more important in producing the gap than Heyns reported; i.e., less than 80% of the increase in the gap occurs during the summer. Nevertheless, differences in achievement gains which occur during the summer remain significant.

In addition, summer would appear to be crucial to closing the gap because there are few educational activities competing for students' time.

However, the research does not support the effectiveness of traditional summer school programs in closing the gap. Why? While many potential reasons come to mind, several appear to be more plausible than others.

1. The course of instruction is too short--three to six weeks.
2. The amount of instruction per day is too short--two to four hours.
3. Given the short duration, teachers do not have sufficient time to know the students.
4. The discontinuity between the regular school year and summer school in school rules, procedures, and the content of instruction is too great.

These possible reasons suggest inadequate planning and/or inadequate resources. Without good planning and sufficient resources, we cannot know the extent to which summer instruction can help close the achievement gap.

An alternative would be to provide year-round instruction with one- or two-week vacations scattered throughout the year. Intersession periods could be used to provide additional instruction. Perhaps the breakup of the concentrated 12-week summer period into multiple short vacations would assist learning. However, we do not have any information on the effectiveness of such an approach.

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[illegible]

EARLY CHILDHOOD EDUCATION

EARLY CHILDHOOD EDUCATION

MAJOR FINDINGS:

- An effective prekindergarten program can lead to a 50% reduction in later special education placement, as well as some reduction in grade retention.
- There is evidence that prekindergarten can lead to a substantial reduction in dropout rate.
- Preschool can affect achievement test scores and attitudes toward school.
- A cost-benefit analysis of a Michigan program showed that because of reduced special education costs and participants' greater expected lifetime earnings, prekindergarten more than paid for itself.

BACKGROUND:

After early optimism, compensatory early childhood education programs fell into disfavor in the early 1970's after initial evaluations seemed to show that their educational benefits wore off after a couple of years.

In recent years, however, the Consortium for Longitudinal Studies has coordinated efforts to assess the long-term effects of programs conducted in the 1960's; they have done a "meta-analysis" of eleven independently conducted projects of high quality, using a variety of outcome measures. Their reports as well as results reported by the Perry Preschool Project in Ypsilanti, Michigan and other locally conducted studies, indicate long-term benefits for the participants and for society.

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Schweinhart, L. J. and Weikart, D. P. Young children grow up: The effects of the Perry Preschool Program on youths through age 15. Monographs of the High/Scope Educational Research Foundation, 1980 (No. 7).

80.40
81.26

CHANGES IN EARLY CHILDHOOD PROGRAMS THAT WERE RELATED TO EVALUATION FINDINGS

MAJOR FINDINGS:

- After extensive observations and comparison of test results, which indicated Title I students got more instructional time and made greater achievement gains than did migrant students, the decision was made to implement the Title I curriculum in migrant classes and provide more and more coordinated instructional supervision to migrant teachers.
- Aides were eliminated when funding cuts were inevitable. Previous research had indicated aides were not of instructional benefit.

BACKGROUND:

Extensive observations indicated that there were differences between the Title I and Migrant Early Childhood classes - most importantly - there was more instructional time in Title I classes and Title I teachers were more often responsible for instruction that were migrant teachers (they shared responsibility more with their aides). Also the Title I students made greater gains on the Tests of Basic Experiences (TOBE) than did the Migrant students. These findings influenced the decision to change the curriculum used in the Migrant Program to that used in the Title I classes. It was also decided that the Migrant classes needed more instructional supervision, so one person became the Early Childhood Coordinator for both Migrant and Title I.

Since both programs faced funding cuts for the 1981-82 school year, and priority was on keeping teachers, aides and student helpers were cut. The rationale for this came, to a large degree, from previous ORE research (as well as other national research) that indicated aides did not increase instructional time nor achievement. The class size was decreased to 16 students. Although not directly comparable, the achievement results from 1980-81 and 1981-82 indicate that students did not suffer an achievement "setback" without aides. Teachers did however not like the aides being removed.

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Christner, C., Final technical report: Title I Migrant 1981-82. Austin, Texas: Office of Research and Evaluation (Publication number 81.26), Austin Independent School District, 1981.

PARENT INVOLVEMENT ORE Pub. No. 77.02

MAJOR FINDINGS:

There are four ways a parent can be involved in educational programs.

- As a tutor: helping his/her child with specific skills at home
- As a paraprofessional: working as an aide, either as a volunteer or as paid staff
- As an active member of the parent advisory council or parent-teacher organization: in an advisory capacity
- As a learner: attending workshops and training sessions offered by the program

It is relatively easy to measure the degree of parent involvement in any of the four capacities, but it is very difficult to measure the impact of parent involvement alone on student gains for the following reasons:

- Parent involvement changes in a program often occurs at the same time that other changes are implemented, and it is difficult to separate their effects
- Although it is clear that children whose parents are involved perform higher, it has not been empirically proven that increasing parent involvement as a learner, paraprofessional, or advisor increases children's achievement gains
- Reaching parents at home seems to be more effective than expecting them to come to school
- Alternative methods of reaching parents are needed: notes to parents do not always reach them or are not always read or understood

BACKGROUND:

There are many theoretical papers that advocate parent involvement. Empirical data on the effect of parent involvement on achievement, however, are not only scarce, but inconclusive. (Stanford Research Institute, 1973 and Crosset et al., 1972) Studies measuring more general outcomes agree that attitudes and morale of program staff, parents, and students are higher when parent involvement is higher (Brophy, et al., 1975).

McKinney (1975) reports that parents tutoring their children at home produce higher scores in reading and math and a "much more positive attitude" towards school. He also points out that parent involvement in a tutoring capacity is more likely to occur using school representatives visiting the homes, as opposed to expecting parents to come to the school.

Although it is often said there is a lack of interest on the part of the parents, other reasons could be the cause of low achievement. (Shadick, 1970)

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PARENTAL INVOLVEMENT ORE Pub. No. 79.23

HAPPY TALK

MAJOR FINDINGS:

- Happy Talk produced achievement gains with minimal instructional activities.

BACKGROUND:

One program that was successful in improving achievement was the Happy Talk early childhood program. In this program paraprofessionals visited the homes of four-year-olds to model an educational activity with the child for the child's mother. The activity used a toy or book as a prop. The parent was to repeat the activity with the child during the week. The next week another activity was modeled.

In the final year of the program, students were randomly assigned to participate or to be control students. The Peabody Picture Vocabulary Test was given to the students before and after the instruction. The results showed that participants made greater gains than control students.

This program provided minimal instructional activities, yet it produced a significant achievement gain. The results support the notion that gains or benefits are readily obtainable from compensatory programs when they provide educational opportunities where few exist rather than attempt to significantly improve existing experiences.

REFERENCES:

Doss, D., Final technical report: ESEA Title I regular program 1979-80. Austin, Texas: Office of Research and Evaluation (Publica-number 79.23), Austin Independent School District, 1979.

PARENTAL INVOLVEMENT

ORE Pub. No. 80.71
81.26
82.37

MATH AND READING RAINBOW KITS

MAJOR FINDINGS:

- Chapter 1 and Migrant parents report their top priorities to be working with their children at home in reading and in math.
- No discernible achievement advantage has been found for Kit participants when compared with a similar group of nonparticipants.
- Although no achievement advantage has yet been found, parents have been highly positive about receiving the Kits.

BACKGROUND:

Both the Math and Reading Rainbow Kits were developed in response to surveys of Chapter 1 and Migrant parents indicating their top priorities were working with their children at home in reading and in math. There is a math and reading Rainbow Kit for each grade level (K-6) focusing on the essential competencies.

Analyses done (by grade level) on the math/reading scores of students who received the Kits compared to similar students who did not receive the Kits revealed no greater achievement gains for the students receiving the Kits.

Although there have yet to be measurable achievement advantages for Rainbow Kit participants, parents have been highly positive about receiving the Kits. Also parents' expressed priorities are still to be helped in working with their children on reading and math at home, and these Kits are directed at these needs. Therefore the Kits may be an effective parental involvement tool even if, thus far, no discernible achievement increases have been measured.

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PROGRAM AND STAFFING STRUCTURES: REACTIONS

by

Thomas C. Rosica
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PROGRAM AND STAFFING STRUCTURES: REACTIONS

Barbara Heyns: Summer Programs and Compensatory Education

In reviewing Dr. Heyns' report, my personal experience coincides with her findings. Although we have in-depth evaluation reports on all Federal projects, the reports on summer programs do not provide the statistical or achievement information found in other reports. However, with the explosion of projects this summer, evaluation designs are tighter and data collection will be more precise.

I wonder whether or not summer programs should be structured as "new endeavors" or whether they should in fact be part of an extended year curriculum.

Summer programs, in the years to come, will see a change of focus. The implementation of promotion policies and the more rigid graduation requirements will force many school districts into rethinking what should be the curriculum for summer. The relative ineffectiveness of summer remediation must force school districts to take a hard look at content of reading and math programs. I agree with Dr. Heyns when she states: "it is not clear whether effectiveness should be measured as 'gains' or as 'arrested declines'" (p. III-27).

Summer programs are not confined to services for children. There are frequently summer programs that focus on staff development. Information on the effectiveness of these programs is practically nonexistent. Isn't this an area that also needs careful review?

The effective schools movement and development of school improvement programs have also used the summer for planning activities. Do these activities impact on improved instruction and better school organization?

Dr. Heyns has me asking a lot of questions to which there are no answers. These areas will need further investigation.

If we're ever going to get a handle on what's happening during the summer, data collection methods must be refined, a standard format developed, and common definitions written to assist in the uniform collection of data.

Some of the items I would like to see included in a standard form are:

- Is the program designed as remedial, recreational or both?

- Is the purpose of the program maintenance or improvement of achievement?

- How many minutes per day, days per week, and how many weeks will the program operate? How much time per day will be devoted to remedial instruction, enrichment, and recreation?

- What are the objectives of the program? Do they spell out specific achievement goals? Have these goals been accomplished?

- Attendance--What is the pool of eligibles; how many have been enrolled; how many completed the program?

- How many children successfully met the programs' objectives? Was an objective measurement technique (a standardized test) used?

- Was a homogeneous or heterogeneous grouping technique used?

- Are more nonpublic school children being offered summer programs to meet the "equitable services" provision in the law? Are these programs as successful as public school programs? Are nonpublic school teachers hired to work in the program?

As you can see, I have more questions than answers. The only way we will ever be able to determine the effectiveness of summer programs is to amend the law to require uniform data collection. Perhaps a way to finance this effort would be through an earmarking of state administrative funds for this purpose.

Francis Archambault:
Instructional Setting: Key Issue or Bogus Concern

Dr. Archambault has provided an excellent review of the literature in Instructional Setting. His analysis of the strengths and weaknesses of pullout and in-class instruction are clearly stated.

In reviewing the paper, I find myself in general agreement with his conclusions.

- On the change from pullout to in-class programs, it is my assumption that changes in local conditions rather than changes in the law and regulations, have stimulated the use of in-class models.

- On the reason for choice of pullout models, I agree that this is more a matter of compliance, rather than for pedagogical reasons.

- I agree wholeheartedly with the statement "the type of instruction delivered within a particular setting is more important than the setting itself" (p. III-68). A truism if there ever was one.

- I agree with Glass and Smith (1977) on the negative impact of pullout programs.

- Carter's (1984) analysis of the effect of classroom practices, particularly the instructional leadership of the principal, reinforces my perception of the elements necessary for solid programming.

- I disagree with Yap (1985) on cost effectiveness and agree with Dieneman, Flynn, and Al-Salam (1974) and Fitzgerald and Hunt (1985) on their conclusions.

- I disagree with Glass and Smith (1979) "that reducing class size to 15 and delivering instruction within the regular classroom would not only redress some of the problems occurring within pullout programs, but also improve student performance."

- Kennedy's (1978) advice on labeling and stigma, is excellent.

- I also agree with Kennedy's suggestions on coordination between regular and compensatory education instruction, "the quality of joint planning that occurs, the amount of decision-making power given to teachers...and the flexibility in scheduling are key elements in successful planning."

- In 1984, a program incorporating most of the elements mentioned above, was implemented in Philadelphia. Evaluation results of the 1984-85 program rank it as one of the school district's most successful Chapter 1 programs.

- I support the research finding regarding two teachers per classroom. Experience in Philadelphia over the past two years, strongly supports these conclusions.

- Our research in Philadelphia strongly supports Eyler's (1982) recommendation "that compensatory services be delivered in-class by specialists."

- I concur with Scheutz' (1980) findings on teacher aides. Our evaluation findings in Philadelphia support her premise regarding lack of effectiveness.

- Nonregulatory Guidance issued June, 1983, discusses the statutory and regulatory requirements, and refers to Section 558 (b) and (d) of Chapter 1 and Section 200.62 of the regulations as the provisions currently in effect that govern compliance in this area.

In my personal review of Title I and Chapter 1 over the past 20 years, I have witnessed an evolutionary change in focus.

During the early years of Title I there were enormous purchases of books, equipment, furniture, and instructional materials. This was followed by a period of trying to find the best approach to meeting the needs of educationally deprived children. They were big on cultural enrichment and field trips, guidance services, nutrition, and providing medical and dental services. There were also innovative instructional approaches developed during this period.

Then something interesting happened. The U. S. Department of Health, Education, and Welfare started to audit the programs. Local education agency (LEA) Title I coordinators, who had not paid much attention to the law and regulations, were suddenly confronted with audit exceptions. Since the state education agency (SEA) is the conduit for this funding, it found itself liable for large sums of money.

In order to protect themselves, SEAs decided that they would approve only "safe" projects. Slowly but surely, supportive service projects were eliminated and pullout programs in reading and math became the standards. The pullout programs were "safe and clear." Pedagogically, they may not have made sense, but they were safe from audit exceptions. Gaffney and Schember (1982) are correct when they state: "uncertainty or misconceptions about the meaning of certain requirements and the fear of possible audit violations led some states to promulgate overly restrictive policies concerning the types of program Title I may fund." Thus, pullout programs became the standard.

When passed in 1981, Chapter 1 of P.L. 97-35, was designed to provide greater flexibility in the design and implementation of projects. However, the fear of audit exceptions continues to drive program decisions.

Federal and state rulemaking was curtailed by Chapter 3 of ECIA. In this instance, the U.S. Department of Education circumvented the law by developing Nonregulatory Guidance. Although not binding on the SEA or LEA, it is considered a source document in matters of compliance.

Once again, the principal theme of the scenario is "avoid audit exceptions." As a result, although the law was liberalized, LEAs did not change their basic program structure.

Soon after the passage of ECIA, and not related to the restructuring of Title I, there was an outcry to reduce or eliminate pullout programs. Principals and teachers were growing increasingly concerned about the negative effects of pullout programs. Pressure was being placed on LEA Chapter 1 coordinators to develop in-class designs. They responded and submitted the projects to the state for approval. Although the SEA Chapter 1 coordinators initially resisted, they eventually had to capitulate.

Another trend emerged in 1984. A Nation at Risk became the stimulus for change in some school districts. The additional curriculum requirements and standardizing of the curriculum necessitated that children remain in class in order to participate in all areas of the curriculum. Aides and specialist teachers were placed in the classroom. Different scheduling techniques such as cycling were tried. Once again, the delivery system was altered in response to outcries for change that was not based on sound pedagogical theory but to accommodate the tenor of the times. As a result, we did not see significant gains in achievement. As the literature states, there is no conclusive evidence that in-class programs are superior to pullouts. In viewing the two principal models of Chapter 1 instruction. We are faced with the dilemma that neither delivers significant achievement gains.

In this conclusion, Dr. Archambault states:

> Based on what we know at this time, it is safe to conclude that setting is not directly responsible for student outcomes and that it is "the issue of effective practices, not setting, that deserves the attention of educators" (Leinhardt & Pallay, 1982, p. 557). This implies that they will have to consider, perhaps more seriously than in the past, what goes on within these settings and how regular and compensatory instruction can be woven together to improve student performance. (p. III-88)

He makes the point in the following paragraph that "effective school literature...would be a good starting point for this renewal emphasis on effective practice." I agree!

In order to accomplish this goal, I propose the following changes in the law governing Chapter 1 (P.L. 97-35):

That school districts be permitted to apply for a waiver from Federal and state requirements to conduct experimental programs in Chapter 1. To be eligible for this waiver, a school district will have to meet the following criteria:

> 35 percent or more of the children in the district must come from low-income families or 50 percent or more of the children in the district must score below the 50th percentile on a nationally standardized test.

Elements of the program will be:

1. The programs will be structured to provide the most effective education in accordance with current research and will include programs and projects to carry out research and demonstration activities.

2. All funding received under the waiver will be accounted for so that programs will be capable of audit in accordance with Federal standards.

3. All projects will be subject to procedures adapted for evaluating the effectiveness of the program in meeting the special educational needs of the targeted students, including the collection and analysis of data relating to the degree to which the programs have achieved their goals. Evaluation procedures will also include objective measurements of educational achievement in basic skills. The results of evaluations will be used in planning for and improving programs in periods subsequent to the evaluation period.

4. Staff development will be offered to all professional, support, and volunteer staff in target schools in order to make trained personnel available to special needs students.

5. Children currently served by Chapter 1 will continue to be served, but children currently ineligible can be included.

6. Funding may be used to reduce class size.

7. Requirements for school-wide projects will be retained except for the matching share.

8. Planning for programs will be developed in conjunction with and involve continuing consultation with teachers, administrators, and parents.

9. The programs developed under the waiver will include components designed to sustain student achievement beyond the academic year in which the program is conducted, including summer school.

10. The district will develop criteria permitting appropriate extension of programs conducted under the waiver which raise achievement of students or schools above eligibility cut-offs for a period of up to two years for the purpose of achieving permanent improvement.

11. Funding received by the school district under the waiver will be used to supplement, not supplant, funds from non-Federal sources for the education of targeted students.

12. The waiver period should extend for five years, with a performance review at the end of each year.

Harris Cooper:
Student-to-Instructor Ratios

Dr. Cooper's review of the literature is excellent. The summary provided at the end of the paper is faithful to the review in the body. I have, therefore, used the summary to provide two comments which I feel are pertinent in the discussion of his paper.

Summation

> Attempting to identify the effects of reduced student-to-instructor ratios on student achievement required the examination of two hotly debated topics in educational research. Reviewers of the class size literature disagreed over whether a reduction in instructional group size has its intended effect and, if the effect in fact exists, how general it is over other variations in the learning environment. However, some consensus did emerge with regard to the circumstances most relevant to this discussion.

> Reduced class size appeared to be most efficacious with low-ability or disadvantaged students when reductions were in the range typically associated with Chapter 1 programs. Such reductions may not only lead to higher achievement but to better student and teacher attitudes and morale and to an enrichment of the core curriculum. (p. III-53)

Note that the reduction in class size necessary for producing any meaningful differences in achievement must be quite large. Reducing class size from 30 to 20 is not likely to do much for student achievement. The figure presented from Glass, Cahen, Smith, & Filby (1982) is extremely misleading because the ordinate (y-axis) stops at the 50th percentile instead of at the first percentile. This distorts the curve and makes the relationship appear to be much stronger than it is. For example, the difference between class sizes of five and ten, when there are more than 100 hours of instruction, is only seven percentile ranks (85-75). And, the effect for changes in class size is maximal at the lower end of the class size continuum.

> There was less controversy over the research on time and learning. Scholars in this area generally agreed that increases in allocated, instructional, and engaged time lead to increases in learning. However, because allocated time does not translate directly into more time-on-task, allocated time shows a lesser relation to achievement than more proximal time measures. Increases in time also showed diminishing returns, but the nature of the curvilinear relation between time and achievement is as yet unspecified. Disagreement existed among scholars over whether the size of the effect warrants increases in allocated time, as opposed to other types of interventions. Also, related research indicated that the greater amount of allocated time given to Chapter 1 students may not represent a net advantage. Instead, it may serve to lessen an advantage that more able students possess because they generally spend more time engaged in appropriate tasks. (p. III-53)

Note that student achievement is very dependent upon such teacher variables. This seems rather obvious, but it is a point often overlooked by school district administrators. If we accepted this notion, teacher training and careful, controlled, research/evaluation on the various alternative approaches to providing Chapter 1 services (or any other services) would be undertaken. The effect might be to have fewer, more expensive projects, but those projects would have a better chance of improving the achievement of Chapter 1 pupils. It is unfortunate that many school districts have failed to determine the potential for a project's effectiveness before full scale implementation.

In his paper, Dr. Cooper makes a case for smaller class size and more time-on-task to approve the achievement of Chapter 1 students.

However, the ability to implement these changes presents a challenge to LEA staff working for Chapter 1.

Although the Congress passes laws and the U. S. Department of Education develops regulations, it is the states that hold the key to implementing new and innovative approaches in Chapter 1 programs. P. L. 97-35, in its Declaration of Policy, sets forth the philosophy and the sense of Congress on its aspirations for Chapter 1.

Declaration of Policy

> The Congress declares it to be the policy of the United States to continue to provide financial assistance to State and local educational agencies to meet the special needs of educationally deprived children, on the basis of entitlements calculated under Title I of the Elementary and Secondary Education Act of 1965, but do so in a manner which will eliminate burdensome, unnecessary, and unproductive paperwork and free the schools of unnecessary Federal supervision, direction, and control. Further, the Congress recognizes the special educational needs of children of low-income families, and that concentrations of such children in local educational agencies adversely affect their ability to provide educational programs which will meet the needs of such children. The Congress also finds that Federal assistance for this purpose will be more effective if education officials, principals, teachers, and supporting personnel are freed from overly prescriptive regulations and administrative burdens which are not necessary for fiscal accountability and make no contribution to the instructional program.

However, this has been clouded by "the Secretary's interpretation" of the law, and the fear of SEA Chapter 1 coordinators of audit exceptions.

The greatest fear of LEA Coordinators, however, is a visit by the Inspector General's office. Time and again programs reviewed, approved, and monitored by SEA personnel are found to be illegal by the Inspector General's staff. A review of cases before the Education Appeals Board shows that LEAs who have implemented programs they thought were legal, and the SEA thought were legal, have been found illegal by the Inspector General's staff.

What is even more ironic is that the Inspector General in Washington has not developed a uniform standard for program review. Although audit guidelines have been established, we have "bookkeepers" making decisions on the validity of program offerings. Let me cite two examples:

1. Bennett v. Kentucky—This case involved first- and second-grade readiness classes in 50 Kentucky LEAs. This was a reduced class size model that was approved by the SEA, monitored by the U. S. Department of Education, and found to be noncompliant by the Inspector General. The area of noncompliance was supplantation. This case went to the Education Appeals Board, through the Federal Court System, and finally landed in the Supreme Court. The Supreme Court held against Kentucky. One of the ironies of this case is that after the Appeals Board found against Kentucky the U. S. Secretary of Education reduced their penalty by over 50 percent.

QUESTION: A. Would the Secretary have reduced the amount of the audit exception if they were absolutely guilty of supplantation?

B. Would the State of Kentucky knowingly approve a program that was illegal?

2. The Inspector General's office conducted a Title I audit of an LEA in a Northeastern state. After spending six months in the LEA, and finding no audit exceptions, they decided to expand the scope of the audit to include bilingual programs. In reviewing the bilingual programs, they charged the LEA with using Title I funds to supplant local funds to meet an agreement reached with the Office of Civil Rights. The auditors in this case had done such a poor job in reviewing the program that the Education Appeals Board found in favor of the LEA.

QUESTION: Should the Inspector General's office, in doing a fiscal and compliance audit, have an educator on the audit team?

I cite these examples of audits because LEAs are now more concerned about audit exceptions than developing programming that reflects the best practices in research.

Dr.Cooper's paper cites the benefits of reduced class size and also speaks to teacher competence. If reduced class size will significantly raise achievement levels, the law and regulations must give LEAs the opportunity to implement models that are legal and audit free.

If well-trained teachers are a key to the success of this model, the law and regulations should be crystal clear on the ability of LEAs to train teachers on the techniques and strategies that will bring about improvement. These should not be subject to the interpretation of SEA coordinators.

If necessary, a review procedure should be established in the U. S. Department of Education to assure that the model developed is "audit exception free." The review team should include a representative of the Inspector General's staff, the SEA coordinator, and staff from the U. S. Department of Education's compensatory education staff.

There should also be a provision in the law that permits LEAs to develop innovative approaches to solving problems. Programs of this type should be given a three year experimental status, have a tight evaluation design, a clear audit trail, and be reviewed at the end of each year for continuation approval.

When school districts are given the opportunity to develop creative program designs, we should see more effective Chapter 1 programming.

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PART IV: CURRICULUM AND INSTRUCTION

MATHEMATICS FOR COMPENSATORY SCHOOL PROGRAMS

by

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MATHEMATICS FOR COMPENSATORY SCHOOL PROGRAMS

> Mention of the word *school*, particularly elementary school, often generates a set of images including red brick buildings; matronly teachers; freshly scrubbed, smiling children; well worn books and some disarray in desks; dusty blackboards; and boisterous recesses. The images we all have could go on and on. They are a product of our upbringing. Schools in other sections of this country and even in other countries seem familiar because most of the same images are present. The physical surroundings may differ, but children and teachers and books remain and there is a facility called a school. (Romberg, 1985, p. 3)

Schools for all children are historically recent and were created in large part to transmit some pre-established knowledge and skills to the young and to inculturate them more quickly and systematically into the prevailing social system. As schools in this culture developed one of the assumptions upon which they were built was that students at a particular age are more similar to each other than they are different (Romberg, 1985). Although there is much rhetoric about attending to the individual needs and desires of each child, the actual groupings of children have rarely reflected those concerns. For example, in a typical elementary school all children within age are subdivided into sets containing 20-30 members and assigned to a teacher for a full school year—a self-contained age-graded classroom. Furthermore, the organization, content and development of the set of lessons that are to be worked on by all students have been developed from a White middle-class perspective.

As America continues to grow in size and diversity the groups of children in classrooms are widely heterogeneous in their abilities, their personalities and their backgrounds. Thus, this similarity assumption so fundamental to how schools are organized is false. During the last quarter of a century educators have begun to face up to the problem that we can no longer assume that the teaching of one curriculum via one set of lessons will best serve all students in our classrooms. Procedures have been developed, or are beginning to be developed, to accommodate the variety of backgrounds of individual children. It has been argued that children from low-income and minority families are less well-prepared than their middle-class counterparts to profit from typical school instruction, particularly in reading and mathematics. As a result programs have been developed since the 1960s to help children who did not have appropriate preparation for the existing curriculum. Given that all social legislation related to compensatory programs to help underprivileged students has been enacted with laudable intentions, it is not my intent to criticize their intents. Rather, what is addressed is the reality of mathematical compensatory programs and how they meet or fail to meet those intentions.

Review of Past Practices

In this section I have not reviewed the detailed characteristics of the compensatory programs for school mathematics during the past quarter century. I believe we need careful and well done analysis of these programs which would include the evaluations of their impact. However, that task is certainly beyond the scope of this paper. What is clear is that lots of compensatory programs have been developed by local school districts. Also, if Federal or state funds were used in their development they were "evaluated". By that I mean some data were gathered with respect to what happened in schools when the particular program was followed. From an ERIC search, over 221 reports on compensatory mathematics programs were located. In addition, five summaries of program characteristics of "programs that worked" were found and examined (Fairley, 1978; Grant & Hoeber, 1978; Lyons & Whitebear, 1978; Park, 1980; and Mullin & Summer, 1983). Finally, a few key scholarly studies were identified (e.g., Kaplan, 1966; Neil, 1978; Alderman, Swinton, & Braswell, 1979; Cooley & Leinhardt, 1980; Kenoyer, Cooper, Saxton, & Hoepfner, 1981; Ragosta, 1983; and Carter, 1984). I am not confident that the most important studies have been found, but I am confident that the comments and issues I am raising are relevant to the approach taken in most compensatory programs as a whole.

The perspective I have used in examining the variety of studies and reports comes from the sociological notion that schools can be described as: a place where work for both teachers and students is organized and defined, and where school work is related to a conception of knowledge (in this case mathematics) which is being distributed by teachers to students. My approach was first to examine the conception of mathematics exhibited viewed in these studies. Second, I reviewed how that conception of mathematics had been translated into activities for teachers and students.

To summarize my findings, first I have made four comments about the studies I have reviewed. Following that I raise six issues which I think must be addressed by those interested in the mathematics in compensatory education programs in the future.

Comments

The following comments have been made to focus attention on what I think are some of the interesting and even disturbing aspects I found from my selective review of past work in the field.

1) Mathematical concerns were not addressed. Mathematics appears in the title of many reports and certainly is mentioned in the overview or introductions. However, there is no real discussion of mathematical concerns in any of the papers. Occasionally, there was a listing of arithmetic skills that are to be taught (often to be mastered one by one). But, there is no analysis of the mathematical deficiencies of low-income children or what constitutes the important ideas from mathematics they (or all children) should know. It is as if mathematics was a commonly understood and agreed upon domain important for all. While I agree that some mathematics should be learned by all students, I found it disturbing that no one challenged this assumption or even suggested there may be a debate about what constitutes basic knowledge in mathematics. Each paper deals with procedures of how to improve students without stating what the mathematics was they were to improve upon. In fact, I had to make inferences about the mathematical topics covered and the approach to mathematics in the studies from their procedural descriptions.

2) Goals were not clear. Since education is goal directed, educators can never be free from questions or problems related to the aims of education. However, the approach to compensatory education in these studies contained no statements of goals or even a description of a desirable end product. In fact, the implied goal in many papers was only "improved test scores" even though no one argued for the validity of the test used. Part of the reason for this deficiency is the nature of American society that resists consensus on what the goals should be. It would simplify the problem if one could say these are the goals of compensatory education and then we could design programs accordingly. While this might be conceivable in some societies, this approach is undoubtedly out of the question in our own. Nevertheless, for the variety of programs that exists, it would have been helpful in trying to pick my way through the lengthy descriptions of procedures to have had a better understanding of the specific goals a particular program was actually designed to meet. However, the papers mainly were descriptions of procedures to be followed in the classrooms and test scores.

3) The meaning of evaluation. The term "to evaluate" means "to judge the value or worth." One problem with these studies is that most have presented a very narrow view of what

constitutes evaluation. This is probably due to a requirement that they must gather some information about the effects of programs. However, the evidence gathered is extremely limited. In fact, this limited perspective raises serious questions about the validity of the arguments being made to support any findings. For example, in many studies the only evidence presented is change in mean score data from pretest to posttest. This is a sparse source of evidence for two reasons. First, the tests used to gather the data are of questionable validity. A typical study used a standardized test. No one built a case for the validity of such instruments. Second, given that such tests were used more than change in mean score should have been presented. For example, in individualized-independent learning programs there ought to be variability in rate of learning. If so, then there should have been both an increase in mean scores and an increase in variability. This could easily be shown in a scatter plot relating the pre- and posttest data. The slope of the regression line should be significantly greater than one (see Figure IV-1). On the other hand, mastery learning programs should reduce variability. Thus, the scatter plot between pre- and posttest scores should indicate a regression line with a slope considerably less than one (see Figure IV-2).

Some studies attempted to rule out alternatives. They used quasi-experimental designs with nonequivalent control groups. Then analysis of covariance was done to adjust for initial differences. Usually the covariate was some ability test. The difficulties of using analysis or covariance with nonequivalent groups are well known. These studies do not control enough variables so that one can rule out alternative explanations for change or growth.

In a few studies, for example, the Instructional Dimension Study (Cooley & Leinhardt, 1980) a lot of data were gathered and regression analysis was used to find predictors of change. This procedure is inadequate if there are prior guesses about effects (e.g., those assumptions underlying mastery learning or individualized-independent learning). A much better approach would be to build causal models and test these models.

Of note was the study reported by Alderman, Swinton and Braswell (1979). They gathered different types of evidence to build a case. Not only did they gather test scores but they also examined those test scores in depth and interviewed students to gather information which would not necessarily have been apparent from test scores.

Overall, the evaluation methods used in this set of studies were naive and inadequate. I have no question that lots of interesting things were done for these students with good intentions. Some activities undoubtedly had a positive

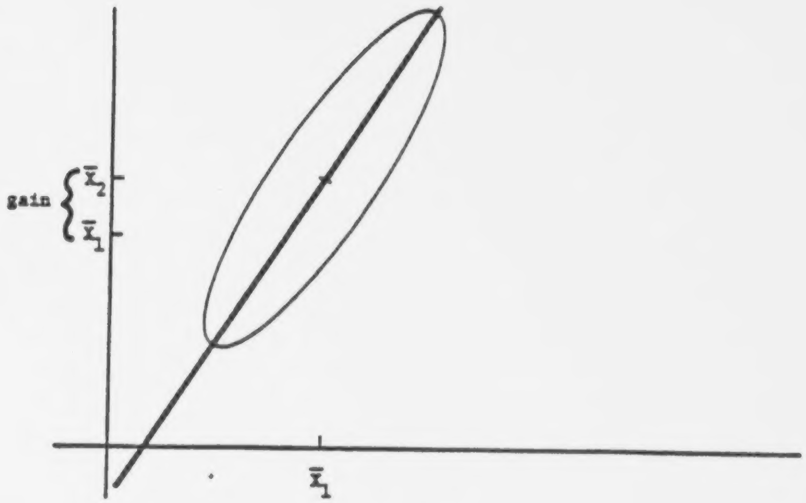
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Figure IV.1. Pre-post Test Scatter Plot for an Individualized-independent Program

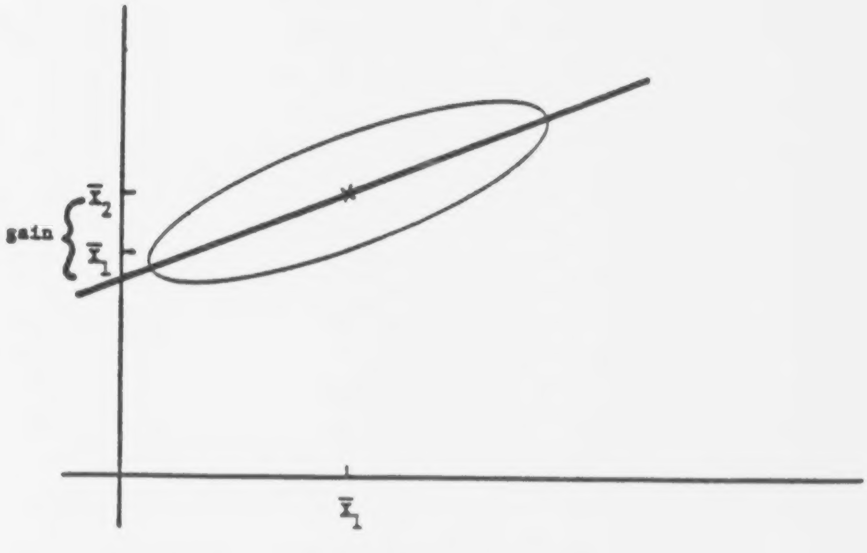
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Figure IV-2. Pre-post Test Scatter Plot for a Mastery Learning Program

effect. However, the evidence to support any position about activities with these students is weak. Some reported positive findings undoubtedly are illusory. Others probably had real effects but the invalidity of the tests led them to fail to conclude that the procedures were positive.

4) Categories of programs. Based on my readings I organized the programs into three broad categories: enrichment programs, differential programs, and developmentally based programs.

A number of general enrichment programs were built following the argument that low-income children lacked a variety of experiences and needed those experiences and intellectual challenges in order to make them similar to the middle-class students. In fact, many of the early Head Start programs (e.g., Kaplan, 1966) were based on this approach. Children were given toys and games that stimulated their senses and encouraged their reasoning skills. Much of their effort had to do with language skills and what little was done in mathematics seemed to deal mostly with counting and simple calculation. This undoubtedly was the approach followed in middle-class nursery schools which was transferred to compensatory programs. Programs of this type have no longer continued (or have had less emphasis since the 1960s) because the approach is probably futile. A few hours in school are not going to change the cultural and experiential background that children gain outside of school. Furthermore, this approach is probably too indirect to meet the needs of children from these poor families.

Differential programs, begin with the assumption that if children differ, then they need to be treated differently. Operationally this means changing the organization and procedures in classrooms. The most difficult task schools have is how a small number of adults can organize and can manage a large number of children. If children are similar, then they can be grouped for whole-class instruction. If they are different, what can be done? The two procedures that evolved were "independent-paced" instruction and "highly-structured" instruction. Also, in either case there were two instructional strategies which were followed. In most classes, Title I students were pulled out of class for separate instruction. In a few instances students were kept in their classes but worked independently in a separate group.

In independent programs the only difference between children taken into account was rate of learning. In these programs a subset of arithmetic was organized via behavior objectives. The list of objectives was operationally defined as the mathematics to be studied. I assume the objectives were developed around higher hierarchical schemes, some incorporate notions of mastery learning. Most used standardized tests to judge outcomes, although some used objective-referenced tests, and most did not describe the specific mathematical objectives or their sequences in any detail. The paper by Ragosta (1983) is an exception. An outline of a set of mathematical objectives covered in a computer based learning program is given. The computer is only a management tool for helping students through this independent method of instruction. In this regard the computer only provides the teacher with a better way to distribute worksheets. It does not provide students with different tasks to perform.

It is not clear in these programs why rate of learning is the appropriate variable which differentiates children from low-income families from others. Nor is it clear why the specific procedural skills of arithmetic constitute the body of mathematics to be taught to these children. Nevertheless many of the programs were able to demonstrate increased scores on tests related to the specific arithmetic objectives being taught. However, it is my guess that these increased scores are illusory. They only indicate that children have improved on a very small part of mathematics, but have not really gained in knowledge. For example, Alderman, Swinton, and Braswell (1979) reported that students in computer based compensatory mathematics group attained higher posttest scores on a curriculum specific test than a control group. However, they made no fewer total errors on the test. Instead exposure to the computer only improved the student's proficiency in taking tests in that they omitted fewer items. This result conforms with the emphasis in the computer curriculum on drill and practice. By design the treatment neither gave the teachers new concepts in mathematics to teach nor a method to diagnose children's misconceptions about mathematical processes.

The "highly-structured" programs were often modeled after the principles of Engleman and Bereiter (1966). Here arithmetic skills were taught to groups of children using direct drill methods. Other programs were based on the group mastery learning model (Bloom, 1968). Unfortunately, in both types of programs simple drill does not remedy student weaknesses in understanding mathematics. For example, when interviewed individually, the students in Alderman et al. (1979) seemed to view numbers in operations as abstract entities and to have access to few meaningful representations. There was considerable emphasis on right answers rather than on appropriate processes.

Perhaps a more famous study is Erlwanger's (1978) on Benny's conceptions of rules and answers in Individually Prescribed Instruction (IPI) Mathematics. In that study he interviewed several students, Benny being one, on various notions of mathematics. Overall Benny's conception of mathematics was that mathematics was a large collection of skills to be mastered with no connections between skills.

My third category is developmentally based programs. These deal with those based on developmental psychological theories (particularly those of Piaget). For example, in the program developed by Kamii and De Vries (1978) a variety of tasks similar to those developed by Piaget was used both to ascertain the child's level of cognitive development and as inherently important cognitive accomplishments. The distinguishing feature between this approach and other programs is its emphasis in determining the child's thought processes. Teachers are then supposed to act in accordance with the child's level of logical conceptual thought. Unfortunately, I found no examples of studies that were psychologically up-to-date. More recent psychological ideas based on cognitive science which might be useful are not mentioned. For example, there are several modern descriptions of cognitive processing (e.g., Wagner & Steinberg, 1984).

In summary, my cursory review of compensatory mathematics programs was disturbing. In fact, if one views mathematics as things human beings do such as abstracting, inventing, proving or applying (Romberg, 1983) there is nothing in the programs I have reviewed that would give low-income students an opportunity to do any important mathematics.

Issues to be Addressed

If compensatory programs are to be developed in the future which respond to my concerns, the following five issues need to be addressed. If considered, debated and resolved, then I believe a mathematically sound program can be developed which would provide all students an opportunity to learn mathematics.

1) The fragmentation of mathematics. Mathematics to most students is a static collection of concepts and skills to be mastered one by one. Furthermore, the student's task is to get correct answers to well-defined problems or exercises. Compensatory mathematics programs seem to have done little to change most teachers' or students' perception of the subject for several reasons. First, mathematics has been over fragmented. To develop a curriculum, one needs to segment and sequence the mathematical ideas for instruction. However, in many recent efforts, this has been taken to an extreme. The use of behavioral objectives and learning hierarchies, such as advocated by Gagne (1965), and operationalized in many individualized programs, such as IPI (Lindvall & Bolvin, 1976) and in turn reflected in many compensatory programs, has separated mathematics into literally thousands of pieces, each

taught independently of the others. The difficulty with this approach is that while an individual objective might be reasonable, it is only part of a larger network. It is the network (the connections between objectives) that is important. The view of mathematics that students get is of isolated pieces rather than relationships.

Second, this fragmentation (and emphasis on low-level objectives) is reinforced by the testing procedures often associated with such curricula. Multiple-choice questions on concepts and skills emphasize the independence rather than the interdependence of ideas and getting right answers rather than using reasonable procedures.

Third, most teachers have not been exposed to a broader view of mathematics. In the United States, few of our teachers are familiar with the history or philosophy of mathematics or have ever worked as mathematicians. Their knowledge of mathematics is what is done in schools. Therefore, it is not surprising that they see little reason either to view mathematics in a different way or to teach differently. They have little sense of mathematics as a craft, or as a language, or as a set of procedures to get answers. It involves such activities as assigning numbers (measurement), building mathematical models to represent situations, and examining patterns.

Fourth, the segmenting and sequencing of mathematics has led to an assumption that there is a strict, partial ordering to mathematics. In American schools, this has been translated in "you can't study geometry unless you can do arithmetic; you can't study algebra unless you can do decimals; you can't study calculus unless you have had trigonometry; etc., etc." A student who is having difficulty adding fractions with unlike denominators should not be denied the opportunity to study geometric relationships.

In summary, the most serious problem faced by curriculum developers is to realize that while daily lessons (pieces of mathematics) must be taught, somehow the interconnectedness of ideas must be the focus of instruction.

2) Learning as absorption. Most current mathematics programs, including compensatory programs, have conceived of the learner as being a passive absorber of information, storing it in memory in little pieces which are easily retrievable. Note that this view of learning is consistent with the fragmentation of mathematical content.

This conception of learning is based on the tenets of "behaviorism," a theory which evolved during the early part of this century. Actually the theory focuses on the outcomes of learning (behaviors) rather than how learning occurs. It assumes learning occurs by passively, but rationally, reflecting on stimuli from the environment. And, it has been used by scholars to study how desired responses to stimuli (outcomes) become fixed by practice and praise (reinforcement). Learning is viewed as change in behavior (or performance) and change scores (pre-posttest differences) on some measure of performance are often used as evidence for learning. This theory, in its many forms, has strongly influenced all education in the United States and in particular school mathematics. Its strength lies in what Schrag (1981) has called its "generative" characteristics. By this he means that the theory has generated a number of practical procedures which can be used in schools.

Probably the most dramatic research findings of the past quarter century center on the fact that learning does not occur via passive reflection (Wagner & Sternberg, 1984). Instead, individuals approach each new task with prior knowledge. They assimilate new information and construct their own meanings. For example, before young children are taught addition and subtraction, they can already solve most addition and subtraction problems using routines such as counting on and counting back (Romberg & Carpenter, 1985). As instruction proceeds, they continue to use these routines to solve problems in spite of being taught more formal procedures. They will only accept new ideas when it is no longer feasible for them to use prior routines.

Furthermore, ideas are not isolated in memory, but organized in collections in what Anderson (1984) has called "loosely-structured schemas." Such schemas are associated with the natural language that one uses and the situations that one has encountered in the past. This constructive notion of learning is not reflected in current instructional materials or compensatory programs.

The implications from cognitive science as yet have not been drawn to mathematics instruction. However, it is clear that teachers should take into account misconceptions (inappropriate schema) some students have in relationship to new information being presented. For example, many algebra students, when they see an expression a + b = __, assume that the equal sign always means "find an answer." This misconception, undoubtedly reinforced by the hand-held calculator, is something that mathematics teachers must deal with when trying to teach students to write equivalent expressions (e.g., a + b = b + a).

Recently several authors have described generative features based on notions from cognitive science (e.g., "story shell" units--Romberg, 1983; Romberg & Tufte, 1986; metacognition--Jones, 1986; "structure of learned outcomes"--

Biggs & Collis, 1982). However, to date no examples of research based on these ideas have been done with compensatory programs.

3) Deskilling of teachers. Because of concerns about trying to get teachers to adopt and use new programs, there has been a tendency to overspecify instructions for teachers. Either a detailed individualized program or a highly structured program takes important teaching skills away from the teacher. Often there are no longer decisions to make about what activities to use. Taken to an extreme, the teacher becomes only a conduit in a system, covering the pages of a program without thinking or consideration. The emphasis of teaching is shifted from curricular content and learning to management of individual progress. The teacher becomes a manager of resources and personnel (Berliner, 1982). Teachers are not encouraged to adapt or change to meet local needs or conditions. They are not encouraged to relate ideas of one lesson to another. For students, mathematics becomes completing pages or doing sets of exercises with little relationship between ideas, and teachers reinforce this perspective.

4) Differential opportunity. The most disturbing fact about compensatory programs was the realization that by compensating for an assumed lack in these children's background, educators have created differential opportunity for learning for these low-income students. Most programs probably widen the gap of knowledge about mathematics between those who are affluent in our society and those who are not. This paradox has resulted because we have created a system which has magnified or widened the differences. For example, children in compensatory programs seem to have little access to the computer as anything other than a drill and practice machine (Reisner, 1983). They do not see it as a creative tool. Children in affluent schools, particularly with parents having computers at home, have a different access to this technology. Furthermore, the subset of mathematics that is covered in these programs emphasizes almost exclusively procedural skills, many of which can be done more efficiently and more effectively with a calculator. There is little emphasis on mathematical concepts, understanding relationships, using mathematics to solve problems, proving assertions, etc. For example, Anyon (1981) saw diversity of classroom practices being defined in terms of social class differences. She depicted the teaching of mathematics in a working-class school as spending a great deal of time carrying out procedures (similar to most compensatory programs). "The purposes of which were often unexplained and which were seemingly unconnected to thought processes or decision making" (p. 8). In a middle-class school she discerned more flexibility in regard to procedures which children were expected to follow. There the teachers tended to set out several alternative methods of solving problems and

made efforts to insure that children understood what they were doing. Next, in a professional school the teacher placed a great deal of emphasis on children's building up mathematical knowledge through discovery techniques or through direct experience. And finally, in an executive school these patterns of teaching were extended even further to include explicit problem solving, testing hypothesis about mathematical variables and encouraging pupils to justify the reasonableness of their answers. I am convinced that most compensatory mathematics programs are programs which create increased differential opportunity to learn mathematics for low-income students.

5) Workbooks/tests as technology. Most compensatory programs developed workbooks and associated tests. The result has been that the curriculum has been defined by the workbooks and judged by the tests. The resulting technology includes the text, which is a repository of problem lists, a mass of paper-and-pencil worksheets, and a set of performance tests. Children are to work independently of each other with little opportunity to discuss, argue, build models, or try out ideas collaboratively. In recent years the workbooks and tests have been computerized. This provides for more efficient data collection and feedback. However, the work for students remains the same. Although a few of the books include things to read, there is very little that is interesting to read. Thus, workbook mathematics gives students little reason to connect ideas in "today's" lesson with those of past lessons. The tests currently used measure products, not processes. Answers are judged right or wrong but strategies or reasoning used to derive an answer is not. Also, many of the tests have marginal validity.

6) Change as ritual. The final issue that I want to discuss is the way in which compensatory programs should be viewed as examples of attempts to change American schools. Changes are most often viewed as ameliorative, not radical (Romberg & Price, 1983). Thus, new programs designed to challenge existing traditions are not seen that way within schools. From experience, we know that adopting a curriculum change is not necessarily using it. Moreover, if a curricular innovation is used by an adopting school, it is rarely assimilated into the school in the manner intended by the developer.

Goodlad (1976), in reviewing major educational reform efforts, maintained that the work of teachers and students has hardly changed since the turn of the century. Bellack (1978) argued convincingly that the most interesting phenomenon of major reform is the schools' remarkable resistance to change. Stability, not change, seems to be the dominant characteristic. Romberg (1985), from an analysis of one reform effort, found that most change, however well intended, ended up being nominal with changes in labels, but not practices. Gross (1969), from a case study, demonstrated how enthusiasm and dedication are eroded in a very short time after which practitioners revert to old habits. In a review of the modern mathematics movement, the Conference Board of Mathematical Sciences (1975) was forced to conclude that modern mathematics was not a major component of contemporary education in the United States, and that there was no evidence it had even been given a fair trial.

Nominal change is the most prevalent type of response to innovations. It involves adopting nothing but labels. Educators are good at this. When team-teaching is in fashion this year, groups of teachers are labeled "Team Red" and "Team Blue." When individualism is in vogue, the new term gets prominence in the school reports. But the routines are not changed. As institutions, schools are under considerable political and social pressure to do things they were never designed to do; nor do they have personnel trained to do them. To maintain political viability or to keep pressure groups at bay, nominal change is often reasonable. I suspect that most compensatory mathematics programs have suffered the same fate.

These six difficulties, I believe, stem from a narrow mechanical concept of education. This is true for all education, but it is especially true for mathematics. Too often the acquisition of a prescribed amount of knowledge under competitive conditions and time pressures constitutes mathematics instruction. If we are going to do anything different, now is the time to consider a new approach.

A New Perspective for Compensatory Mathematics Programs

In this section, my intent is to describe the bases which I think should be considered in developing a contemporary mathematics program. To do so the entrenched beliefs, values and traditions of most educators must be addressed. To begin let me again examine--knowledge and the work of students and teachers. The paper then concludes reviewing the claim for differentiated instruction.

Knowledge. The distinction between knowledge and the record of knowledge, knowing and knowing about (Romberg, 1983), is at the root of several of the dilemmas of mathematical education. As a record of knowledge, mathematics has a vast content. Furthermore, the accepted content of mathematics changes. Davis and Hersh (1981), observing that the world is in a golden age of mathematical production, raise the possibility of internal saturation and exhaustion and the notion that there is a limit to the amount of mathematics that humanity can sustain at any one time. Hence, some parts must inevitably be abandoned as new parts are added.

Since the content of school mathematics is of necessity restricted, controversy between mathematics as a science and mathematics as a school subject, arises particularly if the emphasis is on the record of knowledge rather than on knowing. Thus, it becomes essential to carefully reconsider the purposes of mathematical education of children in order to eliminate the redundant while ensuring the crucial.

The intent for students to acquire a structured knowledge of mathematics is enlightening. Scientific management of the record of knowledge resulted in hierarchical classification and taxonomies of knowledge. This approach meant that mathematics to most students was, and still is, the sequential mastery of one concept and skill after another.

Unfortunately, the connectivity of mathematical concepts and the concept of structure so essential to expert thinking remains missing. Stress on isolated parts essentially trains students in a series of routines without educating them to a grasp of the overall picture which will ensure their selection of appropriate tools for a given purpose.

Mathematics as a discipline has not only internal structure but also integral and reciprocal relationships with other disciplines, especially science, and increasingly with the social sciences and humanities. The complexities of these relationships are likely to challenge the traditional hierarchical taxonomies of content. Theories are needed to provide mental models of the relationships between concepts and topics. Students must see and experience the role of mathematics as a language and a science which orders the universe, a tool for representing situations, defining relationships, solving problems, and thinking. They need to experience the powers of its language and notational system in the solution of problems in a wide variety of domains. The connectedness of ideas is critical, and so is the connectedness of process and concept. Students must experience mathematics as part of both larger content and larger process. They need to see it as a process of abstracting quantitative relations and spatial forms from the real world of practical problems and inventing through the process of conjecture and demonstration of logical validity. The emphasis in instruction must now be on experiences which help them to know mathematics (Romberg, 1983).

When mathematical knowledge means knowing and doing mathematics rather than knowing about mathematics, other things follow. Knowledge is both personal and communal in the sense that, while it may originate in an individual, it is validated by the community. Thus, the process of adding to mathematical knowledge through communicating is an integral part of knowing mathematics. Furthermore, the criterion for knowledge is not necessarily that it be true but that it be incorporated into the general system of knowledge (Rescher, 1979). In a sense, adding to the structure of mathematical knowledge is mathematics. This view means that mathematics is, by definition, dynamic and constantly changing and not, as has been the case in schools, a static, bound cumulation. The implications of these views for the whole culture of schools are extensive, suggesting radical change in the work of students and teachers, and in the professionalism of all educators.

The work of students. The work roles of students and teachers are complementary (Skemp, 1979); one teaches, the others learn. However, since schools are ostensibly places where students gather to learn, the role of the teacher should complement that of the student, rather than vice versa. Unfortunately, when knowledge is regarded as knowing about rather than knowing, the vocabulary reflects a reversal of emphasis. The work of the teacher is then to "transmit" knowledge. Logically, this means that the job of the student is to receive it, regurgitating on demand. In fact, the real work of the student is often a matter of negative goals, meeting expectations sufficiently to pass through the system (Skemp, 1979). Clarke's (1985) description of a student's work in a mathematics classroom is:

> ...she tells us what we're gonna do. And she'll probably write up a few examples and notes on the board. Then we'll either get sheets handed out or she'll write up questions on the board. Not very often. We mainly get a textbook. We'll get pages. She'll write up what work to do, page number and exercise. And that's about what happens. (p. 22)

The traditional situation described is organized, routine, controlled and predictable, and an unlikely environment for the creation of knowledge.

Briefly then, the work of students is to constantly extend the structure of the mathematics that they know by making, testing and validating conjectures, which may originate as postulates of conscious thought or be derived intuitively. As long as it is the student making the conjecture, their mathematical knowledge will always be structured, consciously or unconsciously, because conjecture cannot be created from nothing. This amounts to the process of reflective intelligence in which the structure of knowledge is constantly revised by reflecting on events, seeking ways to fit them into the existing structure, and testing its predictive powers (Skemp, 1979).

Verbal and written communication is a crucial part of the process for several reasons. First, communication in the form of logical argument is central to mathematical proof. Second, communication of that proof is the means whereby personal knowledge is submitted for systematizing into the domain and thus accepted as new knowledge (Rescher, 1979). Third, developing competence in the categories and structures of the language system both structures the child's understanding and advances it towards a public mode of consciousness (Russell, 1978). Clearly, the work of students should no longer be a matter of acting within somebody else's structures, answering somebody else's questions, and waiting for the teacher to check the response. Nor is it a matter of evaluating knowledge according to right or wrong answers. In the creation of knowledge, there is only that which fits the structure of mathematical knowledge already created by the student and that which does not, and therefore should prompt conjecture.

The work of teachers. The primary work of teachers is to maintain order and control (Romberg & Carpenter, 1985). There is an inexorably logical sequence when the acknowledged work of teachers is to transmit the record of knowledge. The most cost-effective way to transmit the record of knowledge is through exposition to a captive audience. Theoretically, the child could read and cover the same ground, but that would require a voluntary act which is unlikely as long as children are not setting their own goals. Consequently, that exposition cannot happen unless there is control, which is easier if children talk as little as possible and stay in one place. It is essentially a system for "delivering" knowledge to the group by controlling the individual. This simple sequence has dictated work, furniture arrangement, architecture, etc., for the last hundred years and is the tradition challenged by any attempt at change. The result is that:

> The traditional classroom focuses on competition, management, and group aptitudes, the mathematics taught, is assumed to be a fixed body of knowledge, and it is taught under the assumption that learners absorb what has been covered. (Romberg & Carpenter, 1985, p. 868)

At its simplest, if one regards the roles and work of student and teacher as complementary, when the emphasis is on creating knowledge rather than absorbing the history of other people's knowledge, the work of the teacher is to support, promote, encourage and in every way facilitate the creation of knowledge by students.

In summary, the essential work of teachers should include:

1. Ensuring successful experience for children.

2. Providing for extended and cooperative project work, whose final product is a report.

3. Providing an informal and interdisciplinary approach to mathematics.

4. Encouraging verbal and written eloquence in arguing intuitions.

5. Encouraging self-evaluation and providing for group evaluation of new knowledge and reference to the formal domain.

6. Demonstrably exercising intuition and adding to their own personal knowledge.

7. Providing an emotional and physical environment which supports student work. This includes, for example, recognition of the need for cessation of conscious effort, a change of activity, or an urgency of immediately capturing a thought on paper. It also includes providing for student experience with both physical and intellectual modeling.

8. Changing from structural authority based on negative or extrinsic goals of students to sapiental authority (Skemp, 1979) founded on intrinsic goals. This is the answer to the uniformist/discipline: creativity/individualistic dilemma.

9. Monitoring the structure of knowledge being created by the child.

10. Using technology appropriately in the processes of: intuition; play; acquisition and manipulation of information; logical argument and communication; evaluating new knowledge against the domain; tracing the development of the student's network of knowledge.

11. In short: to provide the environment; act as a mentor; and get out of the way.

Should Individual Differences be Considered?

Even if a common course of study for mathematics could be developed, the task is not complete, for as Kliebard (1977) argues, while the scope and sequence of a curriculum theory must first address the question of what should be taught, the second question is "who gets taught?" For, although students bring life to mathematics, they add to the instructional complexity, for they also bring to the activities the full range of their differences. To consider those differences implies some sort of criterion that bears on the choice involved about who gets taught what and how they get taught.

Kliebard (1982) has pointed out that the criteria for making such choices are based on claims about schooling from different interest groups. The basic position of any interest group is that schools, teachers, and, in particular, curricular programs should take into account current knowledge about individuals and their differences. Thus, even though the mathematics as outlined in this paper is for all students, interest groups claim their knowledge about individuals should be considered in making instructional decisions. The interest groups are many and varied. Several have information about differences between individuals based on information from differential psychology, developmental psychology, and sociology.

The first and most prevalent set of claims is based on the extensive work of a number of educational psychologists in the Thurstone tradition of distinct mental abilities (Anastasi, 1953). From test score and psychometric analyses these psychologists have been able to identify differential abilities, traits, aptitudes, styles, and so forth. For example, such characteristics as intelligence, rate of learning, field independence/dependence, or spatial ability have been identified and samples of students ordered from high to low on those traits. Furthermore, it is assumed that these characteristics are fixed, stable characteristics which describe intellectual differences between individuals in the same way as height, weight, stature, and so forth describe physical characteristics. Finally, it has been assumed that instruction would be more socially efficient if some of these differences were taken into account.

The second set of claims is based on information that individuals adaptively interact with the environment and gradually evolve intellectually through discontinuous stages (Langer, 1969). Rather than being fixed, differences between individuals are viewed as a function of growth. Primary age children, for example, usually are at a "concrete-operations" stage, think in terms of themselves (are egocentric), and think of concrete referents near at hand. Hence, they should not be expected to reason about hypothetical, external situations. Instruction then should be tailored to their stage of development.

From vast and various sources, sociological data indicate that children come to school having different social, cultural, and experiential backgrounds. These are differences between individuals in parental background, race, home locale, sex, and so forth. It is assumed that with these differences come differing social expectations; hence it is argued that schools should plan and carry out instruction in light of these differences. It has long been assumed (at least by mathematicians) that mathematics is culturally independent. However, recently this assumption has been challenged because of work in at least four areas. One has been from studies of arithmetical understandings of children from non-technical culture (e.g., G. B. Saxe's work with Oksapmin children of Papua New Guinea, 1982). A second challenge has come from the "ethnomathematics" work of the Brazilian mathematician, Ubiratan D'Amberosio (1985). He stresses the importance of the cultural experiences of students in relationship to instruction. A third challenge comes from the "story skill" curriculum unit notion from cognitive science (Romberg, 1983). The stories in this notion should have cultural relevance. The last challenge comes from research on student's strategies for solving mathematical problems set in contextual frameworks (e.g., Scribner, 1984; Reusser, 1986). The social context of problems has a strong effect on the way they are attacked. Thus, while there is a growing awareness that the teaching and learning of mathematics is culturally dependent it is not yet clear how this awareness can or should influence instruction. In particular there is no research on the relationship of the cultures of the economically disadvantaged children in the U.S. and the learning of mathematics. We do not know whether children from impoverished Black or Hispanic communities come to school with conceptions which make their learning of mathematics different from that of middle-class children.

In addition to information about differences between individuals, there are at least two sources of information about intra-individual differences based on data from social psychology and political science.

In contrast to the "between individuals" arguments about fixed traits, stages of development, or cultural determinants, the argument from social psychology is that individuals differ in interests, likes, motivation, persistence, attitudes, attributions, and so forth. These social characteristics are transient and may change because of curricular unit, environment, teacher, membership in a group, and so on. Instruction should try to capitalize on these transient differences.

Information from political science is based on the notion of "individualism" as an ideological construct in American history. In political thought, this involves the liberal belief in the autonomy of the individual. There are three distinct components of this belief: (1) self-determination--the individual is in control of his own destiny; (2) self-actualization--the good life is attained through acting on one's personal needs and desires; and (3) self-direction--the desire to be free from social constraints. Thus, schooling should offer the student the possibility of studying different (or optional) units. It should be noted that "individualism" assumes the existence of "individual differences" but does not consider identification of those differences particularly relevant. Note that in the first four arguments it was assumed that wise adults can plan, organize, and make decisions about instruction based on information about differences. In this case, the argument is that the learner should make the choices.

Not only do the interest groups who have their claims on one of the five perspectives about individual differences base their arguments on different information; they also reach different conclusions about how instruction should proceed based on that information. One argument is that instruction should be adapted to "complement" differences. For example, if some students learn at a faster rate, they should be allowed (encouraged) to proceed through a program at a faster pace, or if students differ in spatial ability, activities should be adapted so that students with that ability can utilize it in learning and, at the same time, other adaptation should be made so that those low in spatial ability are not handicapped. This is the "aptitude by treatment" interaction argument put forward by Cronbach (1957). It is argued that this approach teaches the same mathematics to all students but in different ways. This is naive because "different ways" imply different processes; hence different mathematics is being learned even if the same concepts or procedural skills are included. Thus, the content of a two-year algebra course, as received by the student, is not the same as a one-year course even though the syllabus is the same.

A second argument is that instruction on the same mathematical units should be adapted to "compensate" for differences. This is often put forward in terms of social equity. Social, cultural, and even intellectual inequities exist, but the school should not exacerbate the inequities. For example, ability grouping is seen as social-class grouping. Thus, differential instruction based on "ability" would only further differentiate social classes.

A third argument is that different students should be taught different mathematics. In particular, the curriculum should not be considered common for gifted or handicapped students. This again assumes that adults (teachers or counselors) are wise enough to decide who gets what mathematics. A part of this argument is that since mathematics is hierarchical, success at one level is a necessary prerequisite for further mathematical study. Thus, half the ninth graders in most secondary schools are counseled to take "general mathematics,"one cannot enroll in Euclidean geometry without passing algebra, and so forth.

The final argument is that different students should have the option of being taught different mathematics. Mathematics, like other subjects (literature, history, science, and so forth), is seen as diverse and interconnected, but not strictly hierarchical. The diversity includes a rich array of activities or topics which all students should have the opportunity to consider and select.

Given that these perspectives and arguments (and others) exist, that they are based in part on valid information, and that some aspects of dealing with individual differences have been incorporated into the traditions of some schools, the question still remains: How should a school react to these interest groups? This is a serious, social-political question. It is a topic upon which considerable open discussion and serious debate needs to be carried out. Without such debate, schools will undoubtedly ignore the additional pressures and maintain existing haphazard traditions.

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CURRICULUM AND INSTRUCTION: READING

by

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CURRICULUM AND INSTRUCTION: READING

An Unusual Strategy

Conference papers follow a predictable model. A problem is introduced and expounded. The pertinent literature is reviewed, with or without the assistance of an organizing framework. Generalizations are drawn and recommendations are proposed.

Perhaps because of the press of time, perhaps because the task is both ambiguous and inherently complicated, perhaps because of personal limitations, I find myself unable to follow this time-honored tradition in the present instance. Rather than leave respondents waiting with frustration to learn what I plan to present at the June conference, I will use this draft to share thoughts in midstream.

The draft does have a structure of sorts. I will begin with confusion--the history of the request for the paper. Next is the background that will be brought to bear in my analysis--something old, something new, etc. This section is brief, listing the sources but not expanding on them. My "conclusions" come afterward, too early perhaps, but may as well be clear about my hypotheses and biases. The present draft also ends in confusion--the argument that links the background to the conclusions is not yet fully formed...

The Request

A Phone Call

After New Year's Day 1986 but before Super Bowl Sunday (dull), I received a call from the east coast asking me to review the literature on the effects of compensatory reading programs. The idea was to expand on a chapter on reading research that Pris Drum and I recently completed for the Handbook of Research on Teaching. What were the policy implications from this chapter? What did it have to say about curriculum and instruction for disadvantaged students? What about individualized instruction in small groups and the instructional materials associated with this approach? What practices seemed most effective for students in compensatory programs?

My Place On The Agenda

The agenda for the meeting arrived a couple of weeks later. Five topics:

STUDENTS
PROGRAM AND STAFFING
PARENT INVOLVEMENT
CURRICULUM AND INSTRUCTION
COMPARISON OF REGULAR AND COMPENSATORY PROGRAMS

My review falls under Curriculum and Instruction (C&I)--reading, the curriculum area most often served by compensatory programs (75 percent, which is surprisingly small to me). Other topics under this heading include mathematics, thinking, instruction, and grouping.

The program entails some degree of redundancy. I will necessarily have to consider the students in compensatory education (comp ed) programs (their language differs in some respects from middle-class children), instructional and grouping practices, and, above all, the place of thinking in the development of reading.

Fine-tuning My Topic

If construed as broadly as possible, I could write a book on this field. In an attachment provided by Research and Evaluation Associates, I was asked to consider reading as a subject matter. This matter will be a focal point of my comments. What reading is, how reading is taught (covered by others under instruction?), how students become readers (another focus for me)--these are also on the list. A final question on the Research and Evaluation Associates list for me has to do with age of onset of reading--this topic is covered in the Handbook chapter, and will not be further elaborated in this draft. Personally, I don't think it is a critical issue with regard to compensatory programs.

And so I enter the task with some degree of uncertainty. On the one hand, I can chose to emphasize the nature of reading, the reading process, and the acquisition of literacy--and the specific factors that might be related to the slow and uncertain progress experienced by children from disadvantaged backgrounds when they move through standard reading programs (and most compensatory programs do little to change this state of affairs).

On the other hand, a broader perspective might also encompass systemic and linguistic-cultural factors that might be the source of problems. In other words, I might take a narrow curriculum view or a broad systems approach.

A Definition of Reading

Another source of confusion is the construct of reading. On the one hand, I might concentrate on the most basic skills--phonics as typically taught falls under this rubric, as do the behavioral objectives that comprise many scope-and-sequence charts. A variation more compatible to contemporary views of reading would place greater emphasis on comprehension.

One can go beyond these definitions to a view of the reading curriculum as a formal system for thinking and communication, playing a role in virtually every other area of the curriculum. This way of thinking leads to a conception of an integrated language arts curriculum, in which reading, writing, speaking, and thinking all play a role. My goal is to cast the issues in this broader framework. I do not believe that we can afford for "real literacy" to be denied to youngsters from disadvantaged backgrounds. Incidentally, I will try to be explicit about the place of writing in literacy programs; it is somewhat surprising that this area is not on the Research and Evaluation Associates list of topics.

Alternative (?) Designs

One final comment about the guidance from Research and Evaluation Associates. The title of this conference is "Effects of Alternative Designs..." I'm not quite sure of the meaning of "alternative" in this context. Not since the Follow Through experiments has there been much effort to compare different programs for effectiveness. We can ask about the "alternatives" provided students in compensatory programs from those in regular programs; these comparisons are so inherently confounded as to render interpretation difficult if not impossible. In any event, I will not worry about the meaning of "alternative" beyond this passing comment.

The Background for This Review

Range of Sources

In this section I will lay out the sources from which I draw my conclusions and on which I will base my arguments. The primary basis is in a collection of review papers that I have authored over the past several years. Some of these focus on empirical research, but the blend includes a fair amount of work that is better described as scholarship. I have a strong theoretical bent, which colors my approach to problems.

In addition to formal papers, I will refer to documents from a number of court cases in which I have served as expert witness. "Evidence" has a different tone in court appearances than on the pages of a scholarly document, but seems appropriate for the present purpose.

I will also call on practical experience. For the past several years much of my time has been spent in the creation and implementation of a staff-development program designed to help schools become more effective in promoting literacy. While the program is not limited to schools serving disadvantaged communities, many of the target schools fit that description. This work has brought me into contact with many of the "realities" of the conference, both through staff work and through classroom teaching. I have taught students in compensatory programs from the barrios of downtown San Jose to the burned-out ruins of the South Bronx, from kindergartners to high school students. Over reliance on anecdote can be dangerous, I realize; so can too great dependency on statistics.

Specific Documents

This section will provide a brief characterization of the documents of primary importance to my review. The respondents may or may not want to read all of them. In this section I will give a synopsis; in later sections I will refer to segments of specific documents that have a bearing on a particular issue; sort of cut-and-paste without actual cutting and pasting.

"Research on Teaching Reading" (1986), recently completed with Priscilla Drum for the Handbook of Research on Teaching, will be a primary reference for me in any analyses of the present status of theoretical and empirical findings in the field of reading. I will also refer to other chapters in this volume where appropriate, especially as regards writings and writing instruction.

The HB (Handbook) chapter, as I may refer to it, is organized as follows. After a brief introduction, page 806 begins a section in which I present a conception of the curriculum of reading (and, implicitly, of writing). The presentation takes oral language as the base, and then portrays literacy as the acquisition of skill in the formal use of language for thinking, for problem-solving, and for communicating. This theme, which will reappear throughout the review, seems to me of fundamental importance in understanding problems in the acquisition of reading by many children in today's schools, and especially those from disadvantaged backgrounds. Writing is an important part of the technology of formal language usage, but is not the only nor even the major consideration--thus goes the argument in the HB chapter.

Reading is seen as comprising four major facets:

DECODING (phonics and spelling, inter alia)
VOCABULARY (word meaning)
"BOTTOM-UP" COMPREHENSION (sentences and paragraphs)
"TOP-DOWN" COMPREHENSION (complete chapters and texts)

Beginning on p. 812, each of these four segments of the reading curriculum is expanded, with a presentation then of research bearing on selected "hot topics." Some of the research is "process" oriented (e.g., how are words recognized by the skilled reader), some is "learning" oriented (e.g., what is learned during phonics instruction, rules or patterns), and some is "individual-difference" oriented (e.g., what is the difference between good and poor readers in what is learned from phonics instruction).

The chapter ends rather abruptly, with little effort to draw broad conclusions about "what it all means." The field of research on reading instruction is clearly active, but there is a piecemeal character that makes the drawing of broad conclusions somewhat hazardous. Our hope was that a more coherent conceptualization of the curriculum of reading would allow researchers to begin to cast their efforts in a more meaningful framework.

Teaching Reading in Compensatory Classes, coedited with Priscilla Drum (1979), reported the results of a four-year study by Educational Testing Service (ETS) that surveyed practices in compensatory classes. The survey findings were organized along several dimensions:

COMMUNITIES AND SCHOOLS
PROFILE OF THE CHILDREN
TEACHER CHARACTERISTICS
ORGANIZATION FOR INSTRUCTION
INSTRUCTIONAL PROCEDURES
MATERIALS

Pris and I wrote four chapters for the volume, in two of which we tried to bring together the diverse threads from the various surveys. In the present draft, I will call on these chapters from time to time. One might argue that the findings are out of date, and hence do not apply. While some matters have changed over the decade (e.g., the involvement of communities), I suspect that the prevailing practices today are much as they were several years ago. If evidence to the contrary exists, I have not been able to locate it.

Human Diversity: Implications for Schools (Calfee, 1983c), was written a few years ago for Ed Gordon at Yale. The National Institute of Education (NIE) had asked him to bring together a number of scholars to reflect on education and diversity in American schools. Ed asked me to help in thinking through the broader implication of the problem, based on my own analyses of the problem, but also using the other papers in the collection. The collection of essays was published a few years ago, but seems to have fallen through the cracks. As I reread my chapter, it seemed that many of the points have a bearing on the topic of the conference. While the chapter bears my name as author, the framing of the issues and many of the sources reflect long conversations with Ed.

The chapter begins with a strong claim:

> The single most important dimension of psychological, social, and educational diversity among human beings is probably marked by the distribution of wealth, and the power that wealth represents.

I'm sorry now that I included "probably." The present conference, it seems to me, revolves around this proposition, and around the question of the role of the schools in alleviating and/or amplifying the differences in home background that children bring with them on entry to school.

There are six sections to the chapter:

I. A THEORETICAL FRAMEWORK FOR HUMAN DIVERSITY
II. HOME AND COMMUNITY AS A SOURCE OF DIVERSITY
III. THE SCHOOL AS A SOURCE OF DIVERSITY
IV. THE INDIVIDUAL AS A SOURCE OF DIVERSITY
V. IMPLICATIONS FOR PRACTICE, RESEARCH, AND POLICY
VI. ROLES OF VARIOUS DECISION-MAKERS

Again, I will point to specific segments of the chapter where appropriate. As I write these words, I am referring to galleys--not sure I ever got a copy of the book. If all goes well, the respondents will have access to a clean copy. The chapter was written near the beginning of the Reagan administration; one of the main changes in the past few years is a reversal of a trend--the movement of wealth from the richer to the middle- and lower-class levels of society.

Other Resources

In the final version of this draft, I will give credit to the numerous other sources on which I rely for background. For the present, let me mention a few items at the top of the pile.

Becoming a Nation of Readers, a popular report from The Commission on Reading (1985) that was prepared under auspices of The Center for the Study of Reading, must be considered by anyone with an interest in the status of literacy in American schools. I will at the appropriate time review this report, and give my reflections on its meaning for the present conference.

The Handbook of Reading Research, completed just recently, would seem to be an obvious resource. It turns out not to be. The needs of children from outside the middle-class mainstream received comment here and there, but in no concerted form. The chapter on assessment by Johnston seems to me to have the most to offer to the present discussion.

In similar vein, Placing Children in Special Education: A Strategy for Equity, though dealing with a different population than is of concern to this conference, is a rich resource. This document, in its analysis of the procedures used to identify and "place" children who are not succeeding in the regular classroom, provides some interesting models for a similar analysis of compensatory reading programs.

The determination of the actual curriculum for a student is ultimately in the hands of teachers. Even in the most prescriptive programs (e.g., DISTAR), the individual teacher can arrange subtle alterations. The child at a drill-and-practice computer terminal can, with a few words from the teacher-monitor, see the routine of the task in a different light. Green's (1983) chapter on "Excellence, equity, and equality" in the Handbook of Teaching and Policy has provided one of the more interesting points of departure on this issue for me.

Program effects, both specific and broad, are necessarily of importance in dealing with the present topic. The recent NAEP (National Assessment of Educational Progress, 1985, 1986) reports on reading and writing will be considered. In addition to my own perusal of these documents, I have asked for comments by several colleagues who are knowledgeable. In addition, several books on effective schools have been useful, including Rhine's (1981a) review of Follow Through findings, and Brookover's (Brookover et al., 1982) summary of how to create an effective school (a compilation of current wisdom and prevailing practice).

And finally (for now), we conducted an ERIC search. The key words included reading, compensatory and disadvantaged. The search turned up 27749, 2178, and 15025 items for each term, respectively. There were 268 items for the combination of the first two, 150 items for the first and last, and 118 for the triple. Relatively slim pickings, and the quality was universally low. I have yet to learn much from an ERIC search, and the present experience is no exception.

And So

You now have (I hope) some idea of the kind of information I have assembled in my head. I could at this point proceed through these sources in classical "review the literature" fashion. Instead, I am going to present my conclusions. These are based only in part on the references listed above. I suspect that practical experience in the schools with students, teachers, and administrators hold equal weight in my mind to the contributions of researchers. In any event, after presenting my thoughts, I will then try to back them up. For the skeptical reader, pretend that I am formulating hypotheses to be tested against the data--in fact, my intention is stronger.

The Conclusions

Perhaps it is too early in the paper to have made up my mind, but I do not start from ground zero. So I may as well get to the point. My view of literacy for graduates of our public schools does not begin with a concept of basic skills or "minimum competency." Given that the school has the student for the better part of the time during 13 years of life, I think it feasible to expect high levels of literacy to be attainable. If the student is not in school during this time, or if the student is unable to function for whatever reasons (lack of sleep or food, or emotional distress due to home conditions), then this expectation needs to be tempered, to be sure. In this section, I will begin by sharing in more detail my conception of literacy, after which I will propose several theses with regard to the difficulty experienced by youngsters from disadvantaged backgrounds in acquiring literacy in present-day school environments.

The Literate Person

The view of literacy entailed in this aspiration is quite broad but also distinctive. The graduate should be able to decode with facility and to the point of automaticity (i.e., without spending mental energy on the process). He or she should be in command of a large vocabulary; more significantly, he or she should have available a range of strategies for gaining some idea of the meaning of novel words--by use of context, by analysis of the morphological structure of a word, by resort to a dictionary if necessary.

In the area of comprehension, the sentence is the starting point. Grammar has not been "in" for some time. My recommendation is not a matter of correct usage but of understanding. An anecdote will serve to make the point. Some time ago, I was approached by a technical writer for a local pharmaceutical company. Her problem was to write instructions for a new product, a kit that would allow a women to determine optimal time during the reproductive cycle for reproduction--the goal being to help the individual to conceive. Following Federal regulations, the writer had revised the original instructions to conform to an eighth-grade level of readability. Readability formulas depend on familiar vocabulary and/or sentence length. The vocabulary could not be simplified, and so the sentences were shortened, largely by dividing complex sentences into short stand-alone sentences. Thus, the preceding sentence, which comprises 21 words, would be rewritten as:

> The vocabulary could not be simplified. The sentences were shortened. Complex sentences were divided into short stand-alone sentences.

In this example, the revised version may be as readable or more so than the original. But in the pharmaceutical instructions, many of the connectives found in complex sentences were left out (e.g., the "so" in the second sentence). When the revised instructions were presented to staff members at the company, they found the simplified version almost impossible to comprehend--the linkages that helped establish cause-effect and other relations were gone.

The point is that there are limits to our ability to "simplify" a message. Some matters are inherently complex, and more rather than less in modern society. The literate person can parse or unpack a well-written but complex sentence or paragraph to get at the underlying relations. In the absence of this ability, it may be impossible to communicate with the individual.

Another example of the point that I am making: minimum competency tests for high school graduation often include an objective related to reading want ads. The idea, I suppose, is that poor kids are going to spend lots of time trying to find jobs; we need to be sure that they know how to look for them. (One might be more concerned about helping the student keep a job, but that's another matter.) Want ads are an interesting example of modern writing. Sometimes they are relatively straightforward:

> RESTAURANT. Round Table Pizza hiring for shift supervisors. Apply at 549 Oceana Blvd., Pacifica.

In other instances, the reader is challenged by both vocabulary and grammar, and must in effect "create" the document:

> RESTAURANT. Catering Spanish spkg w/strong food bkgrnd for Asst Mgr position. Apply 100 Bush, 2nd floor.

I cannot imagine instruction to help a person "read" the second example that does not begin with a grounding in the grammatical models from which the synoptic account is constructed. The writer had something like the following in mind:

> RESTAURANT. A catering business wants to hire an Assistant Manager. The person must speak Spanish, and should have a strong background in the food business.

I was able to construct the expanded version partly from my knowledge of the world, but also from my knowledge of grammatical structure.

The constructive character of comprehension is even more significant in the area of text comprehension. Understanding a text is more than the sum of the words and the sentences. The reader, in approaching a text of more than a few sentences, must impose an organization on the collection of words and sentences in advance of completing the text. The capable reader makes informed guesses about the likely character of the text, uses these hunches to arrange incoming information, and adjusts the hypothesis along the way. In the absence of such active construction, the recollection of the material becomes a mental junkyard, in which much is lost or cannot be retrieved, and where little makes sense in any event.

The kindergartner can understand simple narratives, and can manage certain forms of topical writing (concrete descriptions). The kindergartner does not know that he or she possesses a "narrative schema," however, and is not capable of handling the more formal genre of exposition--descriptive, sequential, and argumentative styles of writing. Narration is a naturally occurring style of text--we are surrounded by story forms from earliest days, whether in the recounting of "how the day went" or "what did you just do" to fairy tales, situation comedies, and so on. Narration, which builds on recurring patterns of human experience, may also be a "comfortable cognition" for other reasons.

Exposition is another matter (Orasanu, 1986). Expository patterns occur less frequently as part of day-to-day experience for most of us. Newspaper writing is one of the few exceptions. The forms that do occur tend to be "acquired tastes." A considerable amount of time in graduate school is spent learning the style of the research report--most citizens are not familiar with this format, and would not willingly subject themselves to the effort required to become familiar with it.

Exposition also tends to be a more complex style. Virtually every story is built of the same basic elements: characters, setting, the "big" problem, the plot, and the final resolution. There is no such communality for expositions. A chapter on energy in a science book, a newspaper editorial, a first-aid chart on CPR, and instructions for completing the 1040A--each of these is likely to have a rather unique structural makeup. Each is likely to be created from more than a single "building block." The examples allow me to make another point--comprehension of expository forms is important for citizens at all socioeconomic levels of the society. Indeed, young men and women entering the armed forces often encounter some of the most complex and personally significant pieces of expository writing when they enter instruction in the machines of modern warfare.

Beyond "Reading"

In the previous section, I have implicitly focused on reading as we commonly understand the term. Let me suggest that literacy for our society goes beyond the inherently "receptive" perspective of taking print and turning it into something that is understood. The literate person can "send" as well as "receive." That is, the individual can rely on the same skills and knowledge to communicate with others--he or she can spell, can select words appropriate to a setting, can fashion sentences and paragraphs, and can create text structures appropriate for a given message. Indeed, it is by the ability to perform these tasks that receptive capabilities are confirmed.

Of course, speaking can serve the same purpose. That is, the teacher can determine that a student has understood an exposition by asking for a recapitulation. The young student who is still in the process of mastering the motor skills required to put pencil to paper can be asked to "compose" orally. The medium is not the message--the mark of the literate person is only partly the ability to handle print. Equally (or perhaps more) important is the style of handling language. The literate person has a distinctive set of tools for working with language in all its forms; this individual "listens" differently than other people.

Several months ago I had occasion to visit a prestigious private school. It was in every way the complement of the compensatory programs that are the focus of the present conference. During my visit, I asked if I might have some students read for me; I was interested in their skills in expository comprehension. Two of the best readers--young women from the seventh grade--were "volunteered." I asked each to read a social studies passage for me. The point of the passage was that a poor country had to spend money to develop goods for export if it was to afford imports. Brazil (the example) had lots of coconuts. The market for coconuts is limited, but by building factories to extract the oil and process the fibrous husks, an export market was created.

Both of the students had serious problems with the text. The first youngster looked up midway and commented, "I'm not going to remember much of this." She didn't. The second girl responded by giving back the topic sentence from each paragraph—a more effective strategy in some respects (at least she had a strategy), but considerable distance from reconstructing what I suspect the author had in mind.

The point is that even in the most advantaged settings in today's schools, we seem at some remove from providing an adequate grounding in literacy as defined in this section. If such is the case in the best conditions, what is happening in compensatory programs?

One final observation. The discussion of literacy may imply that natural language is "bad" or inadequate. The intention is by no means to devalue the natural use of language in natural settings. The college prof who lectures an acquaintance in the congenial atmosphere of the local pub is behaving inappropriately. Rather, the argument is that success in the modern world requires the individual to have competence in the full range of language usage, and be knowledgeable about effective choice of how to apply this knowledge in particular settings.

Conclusion #1: The Kid's Not The Fault

My first conclusion may seem to run contrary to both research and to practice. From the Coleman report onward (and certainly one can find supportive research before Coleman), a prevailing theme is that the child from a disadvantaged home is much less likely to benefit from schooling than his or her more advantaged peer (Coleman et al., 1966).

The facts are on the one hand inarguable. Statistically, home background contributes much more to the prediction of performance on standardized tests than do any of the factors that are typically used to differentiate schools. To be sure, the "experiments" are seldom neat and clean. In America, poverty is often a community matter, so that children from a poor neighborhood are assembled in a common school. Desegregation to achieve racial equality has upset this pattern in some locations, but often with resulting displacement of middle-class clients. Even in those settings in which students from diverse neighborhoods attend a common school, one can find many instances of resegregation at the classroom level on the basis of both race and socioeconomic class. Teachers are not assigned at random to schools and classes in this country. While it is not easy to support the thesis that poor teachers wind up with poor students, neither is it apparent that our best teachers are asked to help students with greater needs.

If any event, the statistical evidence shows that children from low-income families are at risk in our schools. Talk with teachers, and you'll discover that they can give you the reason for the statistics. In ways that are now well documented, students from disadvantaged backgrounds come to school with a range of experience and a style of language that is a poor match to the expectations of the middle-class school environment. Differences that are noticeable in kindergarten are amplified during the years of schooling. One may argue that the differences are an artifact of the metrics but personal experience with kindergartners from diverse backgrounds versus high schoolers suggests to me that the gap separating the groups is indeed greater by the end of the educational experience. The home has not prepared the student for school, and it does not support the student during schooling. In my experience, it is not unusual to encounter comments like "These kids just don't know enough to handle the material;" "What can I do with a child who is so far behind;" "The parents don't really care how the child does in school."

For all of these reasons, and others that might be mentioned (e.g., genetic heritage), a strong and prevailing opinion is that the child from a disadvantaged environment is a problem, and one that the school will be hard to deal with. Indeed, despite substantial and continuing efforts, schools in this country and elsewhere in the world have not been able to help these youngsters succeed. Head Start, other early education programs, Follow Through, various compensatory education programs, Sesame Street and the Electric Company--billions of dollars and some of the best thinking about how and when to help at-risk youngsters, and relatively little to show for the effort.

To be sure, my portrayal is a bit too gloomy. In general, recent reviews of the effectiveness of compensatory education programs suggests that they have a slight positive effect on student importance. The early education literature now documents a number of rather striking success stories. The "effective schools" research has identified conditions under which a school can promote better-than-expected performance on standardized tests. In all of these examples, the investment is rather large (one can argue that the long-range benefits are worth it) and the return disappointingly small (statistically significant, but no "whoppers").

These positive examples, however, do not change the basic presupposition that I am questioning--that the "kid is the problem." The starting assumption is that something special needs to be done, either quantitatively or qualitatively: an earlier start, more time in school, similar smaller class size, individualized attention, a more structured program, and so on. Nowhere do I find a question that perhaps the prevailing practices are flawed, and that youngsters from a broad range of backgrounds might benefit from an educational opportunity of a different character than now exists in most schools.

My hypothesis, to put it most directly, is that the present methods for promoting literacy are in fact off the mark, that they pose a challenge to the more able students, but are virtually pathological for the child from a lower-class home. In making my case, I do not need to assume that such children are a good match to the school; they often are not. Nor, for that matter, must I assume that "the kid is not the problem." It is possible that, under some ideal that I might imagine, we would find that disadvantaged youngsters continue to have trouble acquiring literacy.

The primary reason that I believe in the potential of youngsters from disadvantaged backgrounds is personal experience in settings where these students succeed, where students who "don't know anything" have demonstrated a broad range of knowledge and ability, and have shown themselves able to grasp abstract concepts when given a chance. Expectation is a slippery concept, I realize, and the research literature is not what we might want. Nonetheless, it does appear to me that in many instances a teacher's expectation (or lack thereof) about a student's potential leads to instructional decisions that can be to the detriment of the student's success. Changing expectation will not change student performance directly--there is no magic--but it might well change instructional decisions...

Personal experience is a weak reed, to be sure. One can point to support in the literature--the studies of Barr (1974-1975) and of Allington (1980) in the HB chapter typify the kind of research that I would lean on. In both of these examples, the researchers were rather careful to include details about instructional practice, and they assessed the results of instruction with a broad range of outcomes. I will return to these points later in the draft.

In at least three court cases in which I have participated, I was able to muster evidence showing a negative relation between instructional practices designed to help low-income children and student performance. None of these cases was decided in favor of the side that I represented, but in none of the cases did the judge decide that my testimony was wrong, simply irrelevant.

In Tattnall County (Georgia), high school sophomores who failed to meet a mandated level of performance on a standardized test were assigned to an individualized remedial reading program. They remained in the program until they met the mandate, or until leaving school. Those who failed to meet the mandate were denied a diploma, hence the case. The district had been careful to match the objectives of the remedial program to the demands of the test; all seemed in order. Yet, we were able to show that students were significantly more likely to move out of the remedial program if they managed to take a non-remedial course; to put it another way, the special program designed to help the students was less effective than the regular English and math programs. A suggestion that school practice, not student background, was a factor in determining success.

In Debra P. (Phase II), Florida had to demonstrate that they had taught students what they need to know to pass a minimum competency test for high school graduation. Students at risk were overwhelmingly minority and (I suspect) from low-income backgrounds. The state showed that lots of teachers reported they were teaching the skills needed for success sometime during the student's time in the system. I was able to show from these data that students were more likely to succeed if they were in a district where teachers taught the skills earlier rather than later in the student's schooling, and where the instruction was intensive. In particular, students were more likely to pass the test at the beginning of high school. Remedial instruction in high school following failure was less effective. This pattern held across variation in the socioeconomic level of the district. Again, an indication that school practice mattered over and above student background.

Finally, in a South Carolina case that is still under judicial review, students were placed in tracked classrooms from first grade onward on the basis of ability as assessed by total score on a standardized achievement test. The special programs for the lower tracks were not well defined, but the district's claim was that by narrowing the range of ability, they allowed teachers to deal more effectively with students needs. In this case, we examined the change in performance of students on the "cusp"--a few percentiles one way or the other and the individual student would have been placed in a different classroom. Suppose Johnny and Richard scored at the 30th and 35th percentile, respectively. Johnny was placed in the bottom track (often Chapter 1 supported, hence the case) and Richard in the middle track. The percentile values are sufficiently close that one would not want to claim that the two students were markedly different in reading ability. One might predict, if the programs were equally effective, that both students would remain at roughly the same percentile at year's end. Ideally, a compensatory model might lead to the prediction that Johnny, the recipient of special (though in this instance undefined) resources, might outgain Richard. The results were clearcut. Clusters of students who differed negligibly at the beginning of the year were markedly different at the end of the year—and to the advantage of students placed in the upper tracks. Differences of a few percentiles became differences of 10-20 points. Again, an indication that the program can make a difference, quite apart from measured student ability.

One last "personal experience" note. In the South Bronx a few years ago, I taught a GATE class--youngsters retained in elementary school because they had not passed muster on a standardized test. They were in a remedial compensatory class. The day was gray and dull, and so I conducted a lesson on "weather." Over a twenty-minute session, the dozen or so youngsters performed what could only be considered a miracle. They could neither read nor think, they had no experience relevant to the process of schooling--or so I was informed. Yet, within a few minutes the board was full of the words that occurred to them in response to the topic—words like cold and winter, to be sure, but also hurricane and volcano. I asked about the last-mentioned word—why in response to weather? The student had seen a telecast on a volcano that had erupted and changed the weather in the region. Not bad for someone who didn't know anything... At the end, we reviewed what had been learned, how it might be linked to other concepts, and I asked the students to "read" (i.e., decode) the words. They may have had trouble with standardized tests, but they were not stupid and they knew a lot about the world. One can only wonder about the forces in that school that prevented the teacher from tapping and enhancing the potential. The kids didn't seem to be the problem...

Conclusion #2: The School Doesn't Have The Choice Of Failure

In America, as in most countries throughout the world, the schools serve a selectional function. Some societal roles require educated people, either because of the demands of the task or because it is considered "proper." Some individuals are easier than others to educate. Youngsters from middle- and upper-class homes come to school with a head start; they have been prepared by the family to move into those positions appropriate to people with education. Even if the school is less than fully effective as an instructional institution, these youngsters are likely to become educated. In this fashion, the school preserves social stratification.

Some countries are quite explicit in this mechanism; several nations in Europe provide differentiated schooling that depends on parent's ability to pay. The United States has a long tradition of equal access to education through the public schools; to be sure, the access has been more equal for some than for others. Recent decades have seen major arguments about the meaning of equal access, and the issue remains very much unresolved at present. The rhetoric, at least, is that none of our youngsters should be denied an adequate education because of race, sex, or other class demarcations, including (one hopes) wealth. The rhetoric is increasingly fulfilled for race and sex, but less so for socioeconomic status. Recent calls for higher standards are seen by some as likely to lead to greater inequity--taking the form of increased dropout rates for minorities and other youngsters at risk in school.

In this "conclusion," I want to suggest that the quest for high standards and for equity are converging in this country. My early characterization of literacy fits the argument. The issue can be put quite simply: we are reaching the point in demographics where we do not have enough "easy to educate" youngsters to continue a selection system. California is an interesting test case--in 1986-87, more kindergartners will be from minority groups than from the White "majority." Not all of these minorities are from poor families, to be sure, but neither are all of the White-majority youngsters from well-off families, to the contrary. Increasingly the school population comprises youngsters at the extremes--the only child from a middle- or upper-class family (often but not always intact), and the youngster from a large lower-class family (often but not always with a single mother).

The present system of schooling does reasonably well on the surface with the first student, but has problems with the second student--and there are many more of the latter than the former. Thus far, I have reiterated a point that is typically a concern of those who would promote equity; we should ensure equal access to education for all students. But a declining (now reasonably stable) birth rate coupled with the changing demographics leads to a different concern: HUMAN CAPITAL. To again put the matter most bluntly, there are not enough of the first type of child to handle work-force needs. Until MacDonald's and Burger King's are completely automated, franchises need bodies who are moderately educated. More to the point is the replacement of moderate and high-level technicians and bureaucrats (in the best sense of the word). All of these individuals must be educated; they must be literate in the sense that I have sketched earlier. Minimum competency will not do.

Hodgkinson (1986) has estimated that by the year 2000, if present trends continue, every two adults will be supporting two other adults. As he puts it, of every four adults one worker will support another person on welfare, and another worker will provide for a retiree. A few decades ago, each non-worker was supported by more than a dozen workers; the situation facing us changes that ratio by more than an order of magnitude.

And so my conclusion that the schools cannot afford "failure." That is, they can no longer operate as a selectional system, certifying middle-class child and "dropping out" the lower-class youngster. The cost for the society will be too great. This conclusion is related to my first thesis, to be sure. That is, I am assuming that conditions exist that would permit our public schools to become effective with all youngsters, so that a large proportion of the "welfare" cases would become productive members of society.

I am intrigued with the convergence of concerns, and see it as a potentially powerful force to provide the stimulus and resources needed for school improvement. For the stereotypical "businessman" the goal is to have an assured supply of well educated (i.e., highly literate) individuals for the work force. For the stereotypical "egalitarian," the goal is to ensure that access to quality education is not dependent on student background. We are reaching the point where these two concerns are becoming one.

Conclusion #3: We Should Not Teach Students From Disadvantaged Homes As If They Can't Learn

The reading curriculum for students from middle- and upper-class homes is not that great. Analyses of basal texts show that they shortchange the development of higher-level skills for dealing with text. Narratives (some of high quality, others humdrum) are the staple. Exposition is seldom presented and even less often introduced as such. Rather the student is told to expect "factual" information, with the emphasis on the content instead of the text structure. Vocabulary is presented in rote fashion: "Here are the eight words for today's lesson. Write them on the board, ask students to look them up in the glossary and use them in a sentence. A worksheet is available for further practice." Decoding is presented in the form of an endless list of specific objectives, none related to one another. "SQU" gets billing with the long-short vowel contrast. The primary emphasis is on Anglo-Saxon spellings; by the time the student reaches the third grade, at which point romance words and those from other origins begin to play a primary role, phonics is all over unless you are assigned to remediation for some reason—then it's back to the basics.

One other feature of the regular program should be mentioned—the separation of the various facets of literacy. Reading is taught during one segment of the elementary school day. The books and procedures for reading are used during that time. "Language arts," which is often a placeholder for the mechanics of grammar, is taught during a different part of the school day, from a different book and with different procedures. Language arts may include writing, but in many instances writing (which is beginning to come back) is considered a different topic, with different rubrics and goals. Spelling is likewise given its own brief time during the school day; many of the programs I have seen depend almost entirely on worksheets; students copy words rather than spelling them. In any event, it is rare to see an integrated program of language development and reading. (A brief aside--I recently received a number of Japanese textbooks. In Japan, "language" is taught from a single book from the earliest grades, with all the facets covered in coherent fashion.)

Lots of problems, but nothing compared to the curriculum for the student from a disadvantaged background. The underlying assumption seems to be that the student has few relevant experiences and cannot think. In consequence, the student is carefully taken through very detailed and piecemeal sequences of unconnected objectives. The worksheet plays an even greater role in reading instruction than for "regular" students. The implicit model of learning appears to be founded on practice: PRACTICE MAKES PERMANENT.

The student is more likely to encounter a program in which decoding is emphasized to the neglect of comprehension. The regular student is encouraged to make informed guesses when reading aloud; the compensatory student is asked to "sound out" the word (either may be appropriate, depending on the context, but a steady diet of one to the exclusion of the other does not make sense to me). The regular student may be asked on occasion to justify an answer; this step occurs rarely with children from disadvantaged backgrounds. The middle-class student receives feedback during reading that is balanced between positive support and requests for correction. Feedback is contingent on performance. The lower-class student is more likely to receive noncontingent positive feedback--"You're doing great."

Perhaps most importantly, pacing is likely to be different for regular and compensatory students. Barr and Dreeben's (1983) work demonstrates the effect when teachers, for whatever reasons, slow down the pace for a group of students. In their study, students who were equated for entry ability were either "pressed" or slowed for additional practice. The effects were dramatic, favoring students who were moved ahead even though they may not have completely mastered an objective. To be sure, a student may be confounded when the teacher moves ahead without providing the necessary support. But I have encountered numerous situations in which children trudge through the same materials again and again, striving in vain to "master" an objective that they have failed to complete on an end-of-unit test, falling steadily behind their peers--and these are seldom children from more advantaged homes. The parents object if the child is not at the expected place in the series.

My conclusion, then, is that compensatory programs might work more effectively if we dealt with all youngsters as though they could handle the job. To be sure, we would need to rid the curriculum of the silliness that now infects it. Many students are confused by poorly designed worksheets; Jean Osborne's studies at Illinois provide grist for this mill. The middle-class child has relevant experience--parents have bought silly worksheets at the local five-and-dime and helped the student discover test-taking strategies. In addition, they are available at home to help the youngster over idiosyncratic hurdles.

But let us assume that the curriculum was more straightforward, that the tasks were rendered in more explicit fashion, and that students were provided with adequate instruction in the tasks. My hypothesis is that the amount of differentiation between children from lower- and middle-class backgrounds might be relatively small.

Another anecdote... Some time back I was told by a first-grade teacher that her students (largely Hispanic and poor) could not handle comprehension. The important thing to teach in first grade was phonics skills, and she had barely enough time for that. But even if she did try to teach them abstractions like character and plot, they would not be able to grasp the concepts. I asked to have a chance to try for myself. The situation was not ideal—late afternoon was the only time the students didn't have something important to do, and she insisted that I deal with the entire class. The first lesson was about a chickie and a duckling--both wander about after hatching, with the chickie doing everything the duckling does. The climax comes when the duckling goes for a swim. Not great shakes as literature, but the structure of the tale is clear—two characters, a small number of episodes, a climactic moment, and a final resolution. After reading the story aloud, I asked the youngsters to analyze the piece--who were the characters (they understood the concept) and what was the plot (they had not heard the term but could handle the idea). We even created some parallel stories, and later during the week the students wrote their first stories ever. A week later, we applied the same techniques to the analysis of a third-grade story. The children remembered the terms and the techniques, and the lesson was quite successful. I am not unsympathetic with the teacher. After teaching for two decades in a middle-class school, she was suddenly transferred to a ghetto school. The techniques that worked well before are no longer effective, and it is understandable if she is frustrated; and a class of thirty youngsters did not make matters any better. Nonetheless, I must return to the proposition: we should approach youngsters from poor homes as though they were ready and able to learn, much as anyone else.

Conclusion #4: Changing Present Organizational Patterns May Make It Easier To Succeed

This section will be brief, because I suspect that other reviewers will cover the same territory. Tracking, pullout programs, reliance on paraprofessionals to monitor remedial learning--all of these procedures represent organizational solutions that make the school more viable for teachers and administrators, but they may serve as barriers to progress in improving the curriculum of literacy for youngsters at risk. If coherence is hard to find in the regular program, how much more so when the student must cope with other unrelated activities. No matter how well intended, no matter the providing of individual attention, no matter the immediate feedback from fifteen minutes on the computer, from the student's perspective it must be confusing.

The hypothesized detrimental effects of multiple and unrelated programs are least likely to appear on outcome measures that demand little in the way of sustained and reflective thought. Standardized tests, in consequence, may be insensitive to this problem, and might even show a gain if pullout programs provide additional practice on test-taking skills.

My experiences in staff development for improved literacy lead me to a conclusion that is shared by others--we need to explore the feasibility and effectiveness of funding programs designed to improve schools as educational organizations, rather than programs that are targeted to the individual student. If children were widgets rather than people, targeting the individual might be a workable strategy. But children are people, and the well-being of the school is determined by its effectiveness as a social institution; the well-being of the individual requires the well-being of the entire organization.

Pullout programs are only one form of a more common procedure--the grouping of students based on ability. Other participants will be addressing this issue. A couple of points must suffice. First, grouping at the classroom and within-class levels is more common in reading than in almost any other subject matter area. In consequence, it will be difficult to consider the effectiveness of literacy instruction without returning to this topic. Second, I have written on this topic elsewhere and have rendered testimony in court hearings. I have yet to see clear instances of positive effects from ability grouping (studies of gifted programs in the 30s and 40s are an apparent exception, but the appropriate control groups--middle-ability students provided an accelerated and enriched program--were not included in the designs with which I am familiar), and detrimental effects for lower-ability students are more typical than not.

THE ARGUMENT

Introduction

This section of the draft, an addendum of sorts, is designed to provide supporting information for the argument advanced in the previous sections. In addition, it contains specific references to relevant work of my own as well as others.

The Curriculum

My primary task in this report is to review the curriculum of reading, and to consider the role of the school in general and compensatory reading programs in particular in institutions for promoting literacy for children from low-income homes. Literacy rather than reading—a point to be reinforced in this argument is the notion that the literate person has acquired an approach to language that transcends the medium of print. The literate person, whether in reading or writing, speaking or listening (taking notes), is sensitive to features of the language that are invisible to the person who is illiterate.

This definition of literacy, and its manifestation as a major element of the curriculum of today's school, is quite different from the operational definition reflected in the present curriculum materials. The meaning of literacy, let me suggest, is by no means a constant, but depends on societal needs in a particular time and place. It no longer suffices in the United States to possess "minimum skills" of literacy, whatever the term means.

In the first portion of this section, I will discuss a framework for thinking about literacy in modern life. The basic concepts were presented earlier in the draft. Here I will give theoretical justification for the framework, and will point to a number of pertinent references. Briefly, the framework begins with curricular concepts—ideas about the formal use of language for thinking and for communication, and the application of the natural-formal contrast to the major domains of language (decoding, vocabulary, and comprehension). The conceptual framework is represented in the schools in three distinctive forms—curriculum materials, instructional methods, and assessment techniques. I will have a bit to say about the "translation" in each of these areas.

Individual Differences

The other major part of this puzzle falls under the heading of student differences. Not all youngsters respond equally well to the demands of schooling. It is possible to predict rather accurately how a student will achieve based on academic skill and knowledge on entry to school. In turn, one of the best predictors of entry performance is the socioeconomic level of the family.

Although this equation is well established, the basic proposition underlying compensatory programs is that the relation can be altered. Children from poverty backgrounds, given the proper application of additional resources, may reach higher levels of school achievement than would otherwise be predicted. Given the demographics for the next decade, there is reason for concern--the proportion of "hard to educate" students is increasing; the availability of talented teachers is decreasing; and financial resources for education are unlikely to increase to a level adequate to allow any marginal improvement in programs.

Later in this section I will review the conceptual literature on the nature and meaning of the basic equation, and will present my analysis of the response of school programs (regular and compensatory) to the presence of individual differences. A number of fundamental issues continue to elude our grasp, and my analysis will not provide certain answers--deficit versus difference models, and starting rate versus learning rate, to name just two issues that I want to raise.

The Conclusions

Finally, let me reiterate for purposes of this overview the four conclusions that the argument is intended to support:

> It is a mistake in designing compensatory programs to fix the locus of school failure in the student. In the draft, I phrased the statement more colorfully as "The kid's not the problem." A couple of comments: (a) analysis of existing programs has led a number of observers to suspect that many programs do assume the contrary, viz., that children from low-income families have inherent difficulty in dealing with the demands of schooling; and (b) my statement might be better viewed as a hypothesis rather than a conclusion--while evidence can be mounted in support of this proposition, I doubt that it is a provable conclusion.

Schools must be more effective during the future in helping children from poor homes achieve literacy. This conclusion springs both from an analysis of the curriculum of literacy, of the needs of modern society, and of the demands on the individual in today's world. The main point of the present paper is the importance of construing literacy in a more realistic form for all children; a "cheap" version for poor youngsters is an unworkable strategy.

It is possible to design a compensatory program of curriculum and instruction that promotes adequate levels of achievement in literacy. Implicit in this statement is a criticism—I don't think that the programs presently in place realize the full potential of either students or teachers.

The school is the appropriate (and perhaps the essential) unit for improving instruction in reading and writing. One might argue that I should focus my attention for the problem assigned to me on "curriculum" matters, with allowance for student characteristics or teacher activities—that I have no business sticking my nose into organizational matters. My experience over the last few years suggests otherwise. As noted above, literacy is not a constant. It is defined within a social framework, and I think that a strong argument can be put forward that, for children from disadvantaged backgrounds, the school's definition of literacy for these children is vitally important in determining both curriculum and instruction. Textbooks, scope-and-sequence charts, tests, the involvement of parents, even financial resources all pale in comparison. Again, the reader might want to consider this conclusion as a working hypothesis rather than a well-supported conclusion.

Overview

This section is divided into six segments. The first is the Introduction, now concluded. The second section is on students and homes, and on teachers and schools. The purpose is to give a demographic sketch of present and future trends, and to consider policy implications for "compensatory reading programs." Next comes a brief section laying out a framework for thinking about the curriculum of literacy; I will begin with some general remarks about curriculum, and then lay forth some notions specific to literacy. This section is brief because it relies on previously published documents. The next two sections describe the program of reading instruction in the elementary grades for "regular" students and then for "compensatory" students. The last section includes a summary and tentative recommendations for policy--Federal, state, and local.

Students and Homes: Schools and Teachers

Literacy is at the core of schooling in the United States. The youngster who reaches third grade lacking in the ability to handle text is in bad shape. Some will make it--Nelson Rockefeller was dyslexic, but he did all right. Most will not --they will do poorly in school, they will dislike schooling, they are more likely to drop out, and their success in the society after schooling (by those criteria that are typically associated with success) will be limited. These generalizations are so widely established and believed that I will not attempt to document the assertions.

Students and Homes

Some students come to literacy more readily than others. Many youngsters read before they enter school; I know of no evidence that these children suffer from having gained such foreknowledge--to the contrary. These youngsters are generally from middle- and upper-class homes, whose parents follow the recommendations of the Commission on Reading (1985) that they read to their children before they enter school.

Some students find more support for literacy in the home after they enter school--books are available, homework is solicited and encouraged, dinner-table discussion focuses on the events of the day including the reading lesson. Again, parents with higher levels of education are more likely to provide such supportive environments.

What is the present situation, and what does the future portend? McLaughlin and Shields (1986) portray the present in vivid terms:

> [Of] today's school children,
> 14% are illegitimate
> 40% will be living with one parent by age 18
> 30% are latchkey children
> 20% live in poverty
> 15% speak a language other than English
> 15% have physical or mental handicaps
> 10% have poorly educated parents [a minimal criterion] (p. V-37, cited from Hodgkinson, 1986, p. 6)

Survey data and reports in the popular press suggest that the future is not rosy. A few examples:

Education Week, April 16, 1986, "Rethinking the elementary years" by Reeves. The Census Bureau reports [probably from data biased toward too rosy a picture] that of every 100 children born today, 12 will be born out of wedlock, 40 will be born to parents who divorce before the child reaches 18, and seven will be born to parents one of who leaves or dies before the child's maturity. The United States is the only industrialized nation in which a quarter of all infants and preschoolers live in poverty, the only industrialized nation without some kind of family support policy (Hewlett, 1986).

Newsweek, June 2, 1986, "Hands across America." The report is that real income for those in the lowest 40 percent of citizens has dropped 8.5 percent since 1970; the poor are getting poorer, according to this criterion.

Peninsula Times Tribune (Palo Alto, CA), May 1, 1986, "Big switch in family makeup." A state study shows "a spectacular decline in the relative importance of the traditional family unit, couples with children." The drop was from 54 percent nuclear families in 1950 to 28 percent in 1980. This shift is not limited to the poor.

EDCAL, May 26, 1986, "How U.S. reacts to an alarming dropout rate." More than one in four U.S. students drops out before graduation (to be sure, some of these complete GEDs or the like), and the rate has been increasing one percent per year for the last decade (after consistent declines for a century. The dropout rates are related to minority status (40-50 percent for minorities), which may be a proxy for socioeconomic status.

Center for Continuing Study of the California Economy, Spring, 1986. Projections are that the proportion of non-Hispanic Whites in California will drop from 67 percent in 1980 to 57 percent in 1995, largely reflecting an increase in Hispanic population. [In the 1987 kindergarten cohort in California, the majority "non-Hispanic Whites" will be a minority for the first time in this century.]

These data, which are not necessarily most pertinent but were readily available in documents crossing my field of vision, suggest that the proportion of elementary students for whom reading is "easy" are likely to decline in the next decade or so. These reports may seem "bad news." It will certainly require a change in the present prediction equation if the society (California in particular and the nation in general) is to have the educated bodies needed to do its business.

On the other hand, it may be well to remember the "good news." In 1900, the dropout rate was 90 percent; as late as 1940, only one child in four completed high school. In 1940, White men averaged almost nine years of education; Black men averaged only five. By 1980, the gap between Black and White had closed to one and a half years of schooling—room for improvement, but movement [at least through 1980] in a desirable direction, given the goals of compensatory education (Smith & Welch, 1986). Concomitant with the changes in education, Black men moved from a situation where in 1940 they earned on average only 43 percent as much as Whites to a relative position of 76 percent in 1980.

Teachers and Schools

In my spare time I serve as a trustee for the Palo Alto Unified School District. It is in this context that I feel compelled to remark that if advice were money, one of the problems facing today's schools would be alleviated. Money does not solve problems, but a lack of money can cause problems.

The point is, schools have been getting a lot of advice in recent years: the spate of reform reports, Nation at Risk, and so on—lots of complaints, and scores of recommendations. Of late the spotlight has been on teachers. The ones that we have may not be all that good, but things are likely to get worse—we may not have enough bodies to handle one of the primary functions of schooling, which is care-taking.

The Holmes (Holmes Group, 1986) report from education deans, the Commons report from California, and the Carnegie (Carnegie Task Force on Teaching as a Profession, 1986) report —all focus on the teaching profession. The perspectives differ, but the issues seem to converge on a few problems: (a) those individuals who now handle classrooms will be gone within a relatively few years (the U.S. Department of Education estimates a need for 250,000 new elementary teachers between now and 1993, Reeves, 1983); (b) attracting replacements will be difficult; (c) those who enter the profession are not likely to be the "best and brightest;" (d) steps must be taken to limit entry into the profession to those who are not minimally (or adequately) qualified; and (e) existing procedures for professional development are flawed and need to be replaced by other options.

The present report is not the place to review and critique these reports. I will only comment that I concur in the conclusion that we face a serious problem, but I am not convinced that the array of recommendations provides a coherent solution. Indeed, the recommendations are internally inconsistent in some instances, and seem unworkable in other cases. The issue of preservice preparation, for instance, is greatly confused today, especially for elementary teachers (Commission on Reading, 1985, p. 107ff). They are expected to be informed generalists in a variety of curriculum domains, to be expert in pedagogy (younger children do not benefit from a diet of lectures and demonstrations), and to be sensitive to the developmental and social-emotional characteristics of children--all this based on a general undergraduate education, if some of the recommendations are followed. Reading and language are of fundamental importance in the elementary grades; preservice preparation generally requires only a handful of courses, more concerned with management than with conceptualization.

As part of the preparation for this conference, I conducted a review of the college textbooks used for inservice training in reading--a half dozen of the texts that appear "respectable" and that I judge to be "bestsellers." We looked for several features. First, what did the textbook say about the psychology of reading, the linguistic basis for literacy, the rhetorical foundations of literacy, and the characteristics of the English language (in particular, the influence of the historical peculiarities of the language on the morphology and the spelling system). We found virtually no systematic treatment for any of these domains in any of the textbooks. We also checked the table of contents and the index for references to the particular needs of children from disadvantaged backgrounds, or for reference to compensatory reading methods. We found no coverage of any of these topics.

The bottom line, from my perspective, is that we need to find ways to make the most efficient use of the intellectual talent of those individuals who do choose to enter the profession, and to search out models that are effective in promoting the professional development of novice teachers at the local school site. In short, the improvement of compensatory programs is not likely to be grounded in the sudden arrival on the scene of a new cadre of "hotshots"--to the contrary.

The Curriculum of Literacy

The Concept of Curriculum

In "Cognitive Psychology and Educational Practice" (CP/EP) (Calfee, 1981), I review the findings from cognitive psychology over the last quarter-century, and consider the implications for educational practice. Herewith are some pertinent highlights, plus a few extensions.

The first half of CP/EP covers a wide array of findings, but the major conclusions are two-fold. First, the basic architecture of the mind is quite simple, comprising a number of relatively distinctive functional entities, two of which—long-term and short-term-memory, are especially important to the academic role of school. Long-term memory permits the storage of infinite amounts of experience. This memory spans a gamut from incidental memories to well organized schema; from "multiple-choice" memories to "essay tests." Short-term memory, the locus of attentive concentration, is sharply limited in capacity—no more than a handful of distinctive elements may be mentally juggled at any one point in time. The elements may be more or less informative; the statistician familiar with the algebraic equation for the normal probability function may handle this material as a single "chunk," while a novice is overwhelmed by the number of distinct elements in the equation.

The second conclusion from the review springs from the first—coherence is essential to effective use of our mental resources. Simon (1981) speaks of nearly decomposable processes, I have presented a theory of separable processes (Calfee & Floyd, 1976) or of "carving the turkey" (Calfee, 1982), and Peters and Waterman (1982) urge that we K.I.S.S.—KEEP IT SIMPLE, STUPID. The act of carving may seem all too commonplace; in fact, it is an example of an act of expertise. Green (1983) reminds us of the character and value of expertise in the academic domain in Gardnerian (1984) prose:

> ...there is such a thing as "the house of intellect." [Excuse the shift in metaphor.] The criteria for entrance into it and for status within it are not grounded in distinctions of class, ethnicity, sex, or religious conviction. They are grounded rather in criteria, always debatable, always open to amendment, that express the qualities of mind, the acquired disciplines of thought and reflection that constitute the stigmata of those we call well-educated... Excellence of education should be measured never by the satisfaction of our basic social needs. Its excellence resides always in its capacity to arouse and cultivate those capabilities for memory, action, and social discipline that are ours as human beings. (pp. 338-339)

The upshot of this analysis is that efficient thought depends upon coherent mental representations. If a school subject matter is to be readily grasped, the curriculum designer must meet the challenge of dividing an otherwise complex domain into a small number of distinctive and relatively independent parts, which serve as an organizational framework for the domain. The second half of CP/EP explores the application of this perspective to various "players" in the game of literacy—the student, the teacher, and the principal.

The reference to "efficiency" points up another facet of the concept of a curriculum. Efficiency means that the actor is aiming toward some degree of optimization of a system, which entails reflection and strategic planning. Psychologists now speak of meta-cognition, of "thinking about thinking." Indeed, the capacity to pull away from the task at hand—no matter what it may be—and consider it in a more objective and "removed" light may be at the core of schooling. This capacity to reflect and to explicate is not easily come by—it is an "unnatural act," to paraphrase Gough and Hillinger (1980). The contrast between natural and formal ways of thinking has received comment by a number of linguists and anthropologists interested in the effect of literacy on human thought processes (Olson, Torrance, & Hildyard, 1985). I have argued recently (Calfee, in press) that the capacity of the teacher to articulate a domain of knowledge may be the essence of the profession—the key difference between an expert and a teacher.

Finally, a parallel distinction can be drawn between more or less natural styles of learning. As Greeno (1980) has observed, learning has been a stepchild in the era of cognitive psychology, relatively little research has been aimed during the past quarter-century toward the question of how cognitive processes are required. I certainly make no claim to have filled that void. On the other hand, the early work in mathematical learning theory (Atkinson & Calfee, 1965) provides a foundation for distinguishing between learning that occurs in a step-by-step fashion, gradual increments moving slowly toward eventual mastery, and the sudden leap to acquisition of a principle or an insight.

The early research asked "Which is the true learning theory?" Probably the wrong question, since both types of learning and variations can be observed in experiments. More recently I have suggested that the school may be a key factor in determining learning style (Calfee, 1983a). Nature is the "college of hard knocks;" learning comes from repeated experience, takes time, and leads to "intuitive" understandings. In the ideal school setting, according to this analysis, learning comes from "teaching," may occur almost instantaneously, and leads to articulate awareness. Both styles are important to mastery; knowledge and practice are not substitutes. The school provides the youngster with examples of "learning by knowing," and with the strategic awareness of how to allocate time and mental resources to each style (and the various combinations thereof).

The Curriculum of Reading

How do the preceding remarks inform thinking about instruction in reading? The domain must be portrayed, and a simple representation constructed. A language must be conceived to make this representation articulate. Methods must be created to provide both conceptual knowledge and opportunities for practice.

My answer to the preceding requests is found in large part in Calfee and Drum (1986; the HB chapter). What is the domain of reading? My answer is, the contrast between the natural and the formal use of language (also Freedman & Calfee, 1984; Heath, 1983). What simple representation can be constructed? My answer is to follow the lead of the linguists in their analysis of natural (i.e., spoken) language—phonology, semantics, syntax, and discourse. In the case of printed language, the natural-formal contrast leads to a number of distinctions that are grounded in the study of rhetoric (Calfee & Chambliss, in press). What language can be found to explicate the representation? Again, my first response is to turn to the rhetoric for the basic language, though I readily admit that additional work is needed. In particular, we need to move toward the creation of a conceptual framework that highlights reading but engages all the other formal aspects of language usage.

What about methods to provide conceptual knowledge and opportunities for practice? Just another question in the list, but suddenly we have to take the giant step from concept to event, from theory to practice. Three basic elements provide the operationalization of the concept of a curriculum in the daily life of the school—not counting the human elements: materials (often mistaken for the "curriculum"), instructional procedures, and methods of assessment. I will turn next to these pragmatic aspects of curriculum, first the portrayal in "regular" classrooms and then "compensatory" classes.

The Curriculum for "Regular" Students

In this subsection, I want to consider the portrayal of classroom instruction in reading for typical elementary school children in the United States at the present time. The description, a blend of research findings and personal observations, builds upon a framework of (a) the conceptual basis for the curriculum, (b) materials, (c) instructional methods, and (d) assessment techniques.

Conceptual Basis

The apparent purpose of most reading classes, especially those from first through fourth grade, is to teach "skills." These are relatively small "packets" that are distributed throughout the year's work--short-a, au-, fact versus opinion, and so on. If there is a broader conceptual framework, it is difficult to link the detailed skills to it.

Langer (1984) describes this state of affairs, and places it in historical perspective:

> Implicit in [the skills] model was an orientation that treated the purposes guiding the reading or writing activity as essentially irrelevant....Practice activities themselves tended to become separate from the more complete and purposeful activities to which they initially [in turn of century schools] belonged....This version of [the reading] curriculum is based on an industrial metaphor..., and is often accompanied by a fairly complex management plan that controls the sequence of diagnostic testing, provision of appropriate instruction, evaluation, and reteaching. (pp. 107-108)

Elsewhere in the article, Langer presents a wide array of research findings to support these generalizations--in essence, today's reading curriculum is not grounded in a substantive intellectual framework, but in a sequence of activities that are largely divorced from the traditions and purposes that properly undergird literacy in modern society. Langer makes the point that instruction should link activities and purpose; reading lessons should direct students to a meaningful end. I agree, but would also add the need for teacher and student to aim toward a well articulated conception of purpose, activity, and strategy.

As I argue in "Those who can explain, teach" (Calfee, in press), explicitness may well be an essential ingredient in effective education; in the same document, I describe a number of research studies supporting the conclusion that most literacy instruction in today's schools lacks for explicitness. If a conceptual framework does undergird the work of reading teachers, they are hard put to express it.

Materials

Numerous surveys and observational reports document the conclusion that the basal reader and the teacher's manual drive present reading practices (Commission on Reading, 1985, p. 35; Howlett & Weintraub, 1979; inter alia). Analyses of these materials provides a rather dismal prospect. As noted above, the driving force is "skill." The routine is standard across most series--the typical lesson begins with practice on several unrelated words, round-robin reading, interspersed with scripted questions that assess rote memory for details in the text. Durkin (1978-79) found little time spent on anything that could pass for comprehension (which she admitted found difficult to define) after observing 24 fourth-grade classrooms. After conducting an analysis of the teacher's manuals (Durkin, 1981), she found an explanation; the scripts did not lead the teachers toward comprehension activities.

Analysis of basal readers shows that they are comprised largely of stories or narratives. Expository passages (technical forms of writing) are fairly rare in the basal, though they become the steady diet in the later elementary grades when more time is spent in science and social studies. The content of the stories is variable; some are classics (old or new), others are pedestrian. Seldom is a coherent theme established (e.g., one is unlikely to find a series of stories dealing with the topic of conflict, or "Mark Twain and his contemporaries," or "a flock of fables").

A final note: the materials for reading are totally separate from those for language arts (grammar and usage, by and large), spelling is yet a third set of books and worksheets, and if students have opportunities to write or to "speak," these are either not guided by systematic materials, or else depend on other packages. None of the sets of materials are interrelated; no wonder that elementary teachers are overwhelmed by their task. (An aside--the Japanese teach all of these areas from a single Japanese language text.)

Instructional Procedures

As noted in the previous subsection, direct instruction by the teacher is tightly scripted by the teacher's manuals in most series. The ancillary activities at the end of each lesson provide more freedom, to be sure; in fact, they provide virtually no guidance at all, but teachers seldom have time to spend on the "extras."

Questioning about detail seldom leads to discussion; in fact, the "correct answers" are also listed in the teacher's manual. As Duffy and Roehler (1982) note, the major instructional activity during the reading lesson is to assess youngsters' ability to come up with the appropriate answer. Langer (1984) puts it succinctly, "...there is relatively little thoughtful interaction between teachers and students, between students and students, or between students and the ideas they are reading or writing about" (p. 112).

324

Instruction tends to focus on the content of the text under consideration. Detailed questions focus on the color of Jane's hair, the number of times Herman asked for a cookie, or the reason that Mary Ann was afraid to enter the dark room. Seldom are teachers or students directed toward the generic processes that can be used to analyze language; seldom do the manuals introduce the technical terms that can support such analysis. Neither are teachers nor students led to think about the structural frameworks that can be used to portray the "big picture" when thinking about words or texts. Examples of both processes and structures are presented in Calfee and Chambliss (in press).

In a research program that my colleagues and I have been pursuing for the past several years, we have found it possible for teachers and students to operate effectively with the abstractions implied in the previous paragraph (Calfee & Henry, 1986). In analyzing a story, for instance, the concepts of character and plot are rather fundamental; these are not generally included among the questions in the basal manual (presumably the answers would be too complex to include in the manual). But teachers can grasp these concepts, and when students are explicitly taught to use them as processes for analysis of text, their ability to express the meaning of a story is improved. In addition, youngsters from the primary grades up begin to write more coherent narratives.

The basic structure of a narrative is straightforward enough; the theory of story grammar (Mandler & Johnson, 1977; Stein & Glenn, 1979) suggests that most stories begin with a setting (time, place, protagonists, the "problem"), proceed through a series of episodes to a climatic point, after which the final resolution is achieved. This basic structure can be highlighted for youngsters in a variety of ways, including "story maps." Again, it is possible to provide teachers with basic knowledge that allows them to adapt the existing materials to include activities that help students comprehend the "big picture," but such activities are seldom to be found in existing programs.

Assessment

How does the classroom teacher know how well a student can read? I have referred elsewhere (Calfee, 1983b) to the "two faces of testing." The notion that the external approaches to assessment that dominate pubic discussion have little relation to the methods employed by teachers to form judgments and make decisions (high or low reading group, request assignment to special education, and so on). Dorr-Bremme and Herman (1983) in a survey of teachers and administrators find empirical evidence of this phenomenon, as has Haertel (1985) in a survey of high school students and teachers.

Group-administered multiple-choice tests, favored by external authorities in their quest for accountability, see little use in the classroom. As Langer (in press) argues, this state of affairs is probably as it should be. These tests are at best an indirect measure of what they purport to assess. At worst, reliance on such instruments for instructional decisions is fraught with hazards; Ravitch worries that results-oriented reformers may have "tied their definition of academic achievement to the most mechanistic measures of accountability.... A flood of worksheets and standardized tests has led to a curriculum top-heavy with skills and barren of cultural content" (Association for Supervision and Curriculum Development, 1986).

What do teachers rely on? The answer to this question is not altogether clear from the existing literature. The question needs clarification—rely on for what? Once students are assigned to a reading group, then the basal tends to make decisions. The teacher may adjust the pace through a given series; students' oral reading fluency appears to be a primary determinant of pace (Allington, 1983). Performance on worksheets provides another source of information about student performance, but I know of no systematic study of this question; it does appear that worksheet output (quantity if not quality) is thought by teachers to serve as an important indicator of performance for parents.

In Summary

The program of reading instruction for "regular students" is, in my opinion, lacking in a number of respects. The materials are inchoate and piecemeal, the instruction is didactic and pedestrian, and the methods of assessment provide little insight into student strengths and weakness beyond a surface level. The fundamental problem is the conceptual base on which contemporary literacy programs are founded; an assembly-line notion built around tacking small packets of skills onto the bodies as they move past.

Most children from middle-class homes do acquire the rudiments of literacy. The NAEP (National Assessment of Educational Progress) findings suggest that the norm may be rudimentary at best—progress in the early grades in low-level skills, poor performance in the later grades on more demanding knowledge, and a quality of writing that is a national tragedy (NAEP, 1985, 1986; Congressional Budget Office, 1986). There must be a way of making more informed use of the resources available in the public school systems to help the typical middle-class youngster become more fully literate....

The Compensatory Curriculum

In this subsection four topics will be sketched: (a) a brief history of the concept of a compensatory program for reading acquisition; (b) an account of the distinctions that set compensatory programs apart from regular programs at the present time; and (c) a description of the prototypical "most effective" consideration of the "most effective" school environment for these children.

History

Several histories of the compensatory education movement probably exist; the account that fell into my hands most quickly is Ed Gordon's (1979) response to the papers in the Resnick-Weaver volumes, Theory and Practice in Early Reading. Gordon's opening comments set a proper context: "The education of large numbers of children from diverse backgrounds and with a variety of personal characteristics can be said to be a problem peculiar to modern societies" (p. 300). The remark might be amplified for the present: The effective education of large numbers of children.... The United States has long been a polyglot, and the presence in our schools of children covering a wide range of social and cultural differences is not new by any means.

The quest for effective education springs from a number of sources. As Gordon notes, the 1960s saw an emphasis on equity; this concept is a slippery one (Calfee, 1983c). The basic conflict is between a definition grounded in equality of opportunity versus the requirement of equal outcomes. Moreover, the goal can either be for the individual (at some non-trivial minimum) or for designated groups (minorities, the poor, boys or girls).

In the 1960s, both the Office of Educational Opportunity and the Office of Education (USOE) sponsored a number of school programs designed to reduce the achievement gap between rich and poor students, between minority and majority. These programs included new methods and the use of technology, nursery-school and daycare programs, television aimed at the home, anti-dropout programs, and compensatory education programs.

The largest Federal program has been that which provides direct support of public schools, first as Title I of the Elementary and Secondary Educational Act of 1965, later as Chapter 1 of the Educational Consolidation and Improvement Act of 1981. This funding, designed to "provide financial assistance to local education agencies serving areas with high concentrations of children from low income families to expand

and improve their educational programs" (Kirst & Jung, 1980, p. 4), in 1982 allocated almost $3 billion to 13,000 school districts throughout the United States (Stonehill & Groves, 1983).

Compensatory education is based on a deficit model. Additional resources are targeted to the student, in order to make up for a lack of some sort. What can be expected as a result of this allocation? Gordon gives an answer: "Society's response to the problem of the education of the poor has reflected one of two views of human nature.... [A] more tractile or plastic view of human nature...suggests that intervention can result in a changed quality of function...the opposing, and more popular view...is that little can be done with the have-nots in society... This view leads to missionary-type efforts designed to make the doer feel better..." (p. 307).

The missionary effort need not be quite so pessimistic. Gordon proposes an alternative later in his chapter; the reading deficit in disadvantaged students can be described in developmental language. Reading comprises a series of stages (Chall, 1983). During the early stages the major tasks are low-level skills, predominately decoding (phonics). The logical conclusion is to build compensatory programs around the principles of "a slower presentation rate, involving a good bit of repetition, and [with] generally lower standards and goals than other programs (p. 300)." I do not mean to imply that Gordon supports this argument, only that he lays it out as the foundation for many programs. As he notes, "the discovery of differences between two distinct populations may not enable us to specify the nature of the learning problems [and remedies?] involved" (p. 308).

Another dimension to the debate, which appears only rarely, is the distinction between starting level and learning rate. Disregarding for the moment the question of who or what is the cause of the gap between groups of students, is the difference best characterized as a gap in the starting level (ability on entry to school, the focus of Head Start, Sesame Street, and the like), or a difference in learning rates, or both. I will not attempt to define or resolve this matter here, but simply identify it as a significant task for educational measurement in the future (Rogosa, Williamson, & Willett, in press).

Typical Programs

What are compensatory programs like today? A few years ago, Priscilla Drum and I summarized the results of our survey of the area as follows:

> What is the profile of the "typical" compensatory reading program of the 1970s?.... Compensatory reading funds supported aides and extra materials, and, to an increasing extent, reading specialists. The latter gave intensive instruction to small groups. Aides decreased effective class size and increased instructional time—a cost effectiveness analysis of these alternative resources would seem helpful. Materials increase the available variety and make it more likely that if one approach doesn't work for the student, an alternative is readily available. Otherwise, compensatory programs resemble "regular" reading instruction, for the most part. Funds increase the *amount* of instruction, without necessarily changing the *manner*... (Drum & Calfee, 1979, pp. 184-185)

The data for the ETS survey of compensatory reading programs (Calfee & Drum, 1979) was collected in 1972-73. The profile was consistent with earlier studies (e.g., Austin & Morrison, 1963) as well as somewhat later data (NIE, 1977a). Changes in the present situation appear relatively minor: pullout programs are probably more commonplace, aides are typical, but reading specialists play a greater role.

The review by Allington (1986) paints a picture of compensatory reading programs for the mid-1980s that is consistent with the preceding conclusions.

> Of students served by Title I programs, 85 percent receive instruction in reading or language arts for between two and one-half (Allington, 1980b) and three and one-half (NIE, 1977b) hours per week, the vast majority in pullout compensatory instruction classes (p. 261). The pullout structure produces a more easily followed "audit trail" (Shulman, 1983), [enabling] local and state education personnel to verify compliance with the "supplement but not supplant" regulation with ease. The pullout program structure was not motivated by pedagogical concerns, adequate empirical evidence, or learning theory (p. 263).
>
> A result of the separation is the fragmentation of the school experience for Title I students (Kaestle & Smith, 1982)....Few remedial students received instruction that supplemented their core classroom instruction, but were taught by classroom and remedial teachers who generally expressed different beliefs about student needs and offered different objectives as targets for instruction (Johnston, Allington, & Afflerbach, 1985).

> Half of the teachers interviewed [by Johnston, Allington, & Afflerbach, 1985] were unable to identify the basal series used in any given remedial student's classroom, and more than two-thirds could not identify the specific reader or level of textbook the student was placed in. Only one in five classroom teachers could identify the reading material a remedial student from his or her classroom was using in the remedial setting (p. 263-264).
>
> Data...indicate that additional instructional time is usually not available [as a result of compensatory instruction through pullout programs]. The most damaging evidence is provided by Lignon and Doss (1980) [who found that] instructional time provided by the regular program is supplanted by the instructional time provided the Title I program...Vanecko and Ames (1980) found that in nine of the thirteen districts that they studied students in Title I schools actually received less reading and language arts instruction than students in non-Title I schools (an average of about seven minutes a day less)...Kimbrough and Hill (1981) found that federally funded compensatory education programs tended to replace core classroom instruction, especially in reading (p. 266-267). [In addition], nearly one-third of the scheduled time was spent in "set up" activities before the beginning of any instructional activity. That is, from the time one previous group was released until the next group began receiving instruction, nearly ten minutes of the thirty minute period passed (Allington, 1984, p. 268).

A similar pattern of findings was reported by Kimbrough and Hall (1981) in their (admittedly limited) sample of 24 elementary schools in 8 districts across the nation. The Rand researchers examined "worst case" scenarios in two areas: interference and cross-subsidy. Their conclusions, even if not altogether typical, are disturbing.

They found that Federal programs (primarily compensatory reading programs) interfered with the basic curriculum of reading in several ways: (a) core classroom instruction was interrupted by pullout activities; (b) core instruction was replaced by remedial activities; (c) the teaching methods clashed between programs; (d) administrative burdens were increased; (e) staff conflicts ensued; and (f) students were segregated for large amounts of time. Cross-subsidization resulted from children who were eligible for multiple categorical programs; almost anything could happen under these conditions.

Perhaps as a consequence of the apparently chaotic management of compensatory reading, the effects of such programs have been rather disappointing when gauged against student achievement. Carter (1984), Cooley (1981), Kaestle and Smith (1982), and Levin (1977) are among those who have remarked about the disappointing effect of compensatory programs on standardized achievement test scores.

Another indication is the degree of changes in the performance of minority youngsters over the past few decades. Because of the link between minority status and socioeconomic level in this country, compensatory programs are more likely to serve minority than majority youngsters. The relation is not one-to-one, to be sure, but it would be reasonable to expect that compensatory programs would serve to alleviate the gap in performance between majority and minority students. Another key is to look at trends in performance in disadvantaged urban communities.

The picture varies slightly depending on the data source one examines, but some generalizations seem trustworthy. First, the gap between majority and minority performance is still substantial, and a similar comment holds for the difference between disadvantaged urban areas and the nation as a whole. Second, the gaps have grown smaller in the last decade or so. Third, the reduction is most marked for students in the early school years, and less so for high school students.

For instance, in the NAEP (1984) Reading Report Card, which resents trends over four national assessments from 1971 to 1984, Black and Hispanic students judged to read at an "intermediate" level (roughly the performance expected of a typical junior high student) shows a steady increase over each assessment to the next, and for all three age groups (9-, 13- and 17-years of age), increases that range from 2 to 10 percent (in one instance more than 20 percent). Majority students also show an increasing trend, but only about 5 percent. By age 17, however, 90 percent of majority students have achieved this level, whereas only about 60 percent of minority students have attained it. It its analysis of NAEP data, the Congressional Budget Office (1986, p. 81) notes that the difference between the national average and the performance in disadvantaged urban districts was -29 points in 1970 for 9-year olds, and only -19 points in the 1983 assessment. By contrast, the same differences were -25 and -22 points for 17-year olds in 1970 and 1983, respectively.

Multiple-choice tests of reading comprehension do not necessarily assess higher-level skills, no matter the labeled "objective." Writing puts greater demands on the students expressive ability. The NAEP (1986) report on writing is not encouraging in this regard. The draft report that I have in hand lacks the "data appendix," and the analyses do not highlight some comparisons most relevant to my purposes. Nonetheless, the available information is supportive of the earlier conclusions: the proportion of youngsters at any age who can meet a minimal criterion of adequate writing is greater for majority than for minority youngsters, and there are no clear trends from 1974 to 1984 indicating improved performance by any group. The gap between majority and minority ranges between 15-25 points over years and ages.

Interpretation of these aggregate patterns is difficult, of course. The implication that leaps to mind is that funding allocated to compensatory programs has not caused any concomitant improvement in performance over the long haul--small but unsustainable effects at best. What is needed for secure causal conclusions is an experiment, which will provide the basis for deciding how to aid children from disadvantaged backgrounds. Such an experiment has been conducted--Follow Through--with results that appear clearcut at first reading, but are less convincing on closer examination.

Effective Programs

Give preschoolers from disadvantaged backgrounds a Head Start and the "problem" will be solved; provide supplementary funding to support these students in the public schools and the "problem" will be solved; the easy answers of the early 1960s did not appear to work, and so the Follow Through program was proposed. An extension of Rivlin's (1971) conception of "planned variation," the idea was to carry out a sustained and detailed investigation of the relative effects on student achievement of a number of distinctive approaches to meeting the school needs of poor children. "[Follow Through] survived as one of the last initiatives of the War on Poverty because the planners described it as an 'experimental program' that would aid in identifying educational approaches that 'work best' with low-income children and their families" (Rhine, 1981a, p. 298).

I will assume that the reader is somewhat familiar with the Follow Through experiment. A variety of different instructional approaches were implemented in a nationwide sample of schools. The sponsors of the approaches worked with the local sites to put the programs into place. A standard model was used for evaluation, including methods of classroom observation and student assessment; the former emphasized classroom management and the latter relied on standardized achievement tests.

The results were straightforward: "The highest mean scores on the MAT [Metropolitan Achievement Tests] were attained by students enrolled in two models, the Direct

Instruction Model and the Behavior Analysis Model" (Rhine, 1981a, p. 302). The positive effects of these programs, especially the Direct Instruction (DI) model, were so consistent and striking as to be virtually unarguable; for primary school students in many sites, including disadvantaged urban neighborhoods, performance on standardized tests far exceeded expectations of control groups, as well as the other "experimental" programs. Rhine (1981a, p. 302) notes some qualifications: (a) the DI sponsors may have been more aggressive and effective in implementing the program; (b) the program may have been easier for teachers to implement; (c) the program goals may have been a closer match to the outcome measures; and (d) practice in the classroom may have reinforced skills paralleling to the outcome measures.

Many educated people stand in respect of the experimental method. It has served us well in the natural sciences. Social experiments pose different challenges, as noted by several comments in Rhine's (1981a) analysis:

> The strong emphasis on ethnic minority representation and parent participation in Follow Through often appeared to transform the project into a lightning rod that attracted flashes of energy generated by expressions of discontent and demands for social justice that surged through the larger society. (p. 293)
>
> There is general agreement that results of the national evaluation would have been more meaningful if goals of the Follow Through Project, and of many participating models, had been stated with greater clarity....(p. 298) The interest [of USOE Follow Through administrators] in approximating a truly experimental approach in the project clearly was subordinate to their primary goal, which was to keep alive the possibility that eventually Follow Through could be converted into a major national service project on the scale of Head Start. (p. 300)
>
> Organizing and administrating social intervention studies usually require much attention to building and maintaining effective coalitions of stakeholders whose interest often are diverse and competitive. In such circumstances there may be frequent conflicts between methodological requirements and administrative requirements in decision making.... The challenge for social scientists is to learn how to use their expertise and professional skills with as much objectivity as possible in politicized environments. (p. 301)

Objectivity depends on the eye of the beholder, on the lens through which the object is observed. The Direct Instruction model stands at some distance from the vision of schooling in literacy that I have sketched earlier in this paper. The teacher in a DI program is very closely scripted; little or no deviation is permitted from the prescribed routine. The primary emphasis is on the acquisition of decoding and vocabulary skills. An objective-based construal of curriculum seems quite agreeable to the DI philosophy. And students perform much better than comparison groups. Documentation of these points can be gained from the original Follow Through reports (Rhine, 1981b), and from a wide array of articles by the DI sponsors (e.g., Becker, 1977; Becker, Englemann, Canine, & Rhine, 1981; Meyer, Gersten, & Gutkin, 1983).

Without pretending to be unbiased (my theoretical orientation leads me to question the precepts of this approach to schooling), I will nonetheless present a reading of "follow-up" data on the DI model. Becker and Gersten (1982) provide the data base for this analysis in their analysis of A Follow-up of Follow Through: The Later Effects of the Direct Instruction Model on Children in Fifth and Sixth Grades.

The report covers some of the youngsters who were included in the original Follow Through experiment. Only a handful of the original sites were included in the follow-up--East St. Louis; Smithville, Tennessee; Uvalde, Texas; Dayton, Ohio; and Tupelo, Mississippi. Purists might question the representativeness of these sites; I do not see this issue as critical. Mobility and variation in test instruments reflect the reality of educational research; others wiser than I must find the solution to the practical realities of school assessment.

What do the data show? Becker and Gersten give the following summary: "Results indicated consistently strong, significant effects in WRAT reading scores (decoding), consistent effects in math problem solving and spelling, and moderate effects in most other academic domains. Students appeared to retain the knowledge and problem-solving skills they had mastered in the primary grades. However, without a continuing program, most students demonstrated losses when compared to the standardization sample of the achievement tests" (p. 75).

The Becker-Gersten article is brief but meaty, 18 pages, including nine tables/figures and three pages of references, which means not a lot of prose. Moreover, the authors argue against pooling data over sites for reasons that are understandable. Despite the cautions of the authors, but in the interest of gaining a "picture" for my simple mind, I proceeded to aggregate the data.

The results of my analysis (Figure IV-3) come from an integration of information from all of the tables and the figure in the Becker-Gersten report. Following the authors' assignment, I assume that the WRAT (Wide Range Achievement Test) measures "decoding" or basic phonics, which is an emphasis of the DI program. I assume that performance on the MAT (Metropolitan Achievement Test) is more closely associated with development in vocabulary and comprehension. I have aggregated performance over sites, using both weighted and unweighted means (the differences were trivial). I have made the assumption that the clientele of compensatory programs, in the absence of effective intervention, will average around the 20th percentile level on standardized achievement tests.

My interpretation of the Becker-Gersten findings, based on all of these assumptions, is a follows: First, the DI program does improve the performance of children from disadvantaged backgrounds on tests that assess the "skill" being taught: decoding. Second, the program is not effective in sustaining the advantage on that skill; decoding or phonics may seem a low-level matter, but an argument can be made that understanding the English spelling-sound system is in fact a higher-level concept (Venezky, 1970). Third, and more problematic given the data available, the program does not appear to promote transfer to the other areas of literacy (vocabulary development and comprehension) as measured by the instruments. I do not mean to say that the MAT is a valid measure of vocabulary or comprehension, but that the comprehension and problem-solving capacity tapped by this battery is considerably greater than for the WRAT.

In a nutshell, DI teaches what it teaches—relatively low-level skills. These are not transferable over time to increasing demands, nor do they transfer to the higher-level knowledge and skills that comprise literacy (as measured by multiple choice tests). One might conclude with Becker and Gersten that "more of the same" is needed; if the goal of schooling is independent growth, however, then this picture of the sixth grader from a DI program in the primary grades is not too encouraging.

Effective Schools

Another major entry on the scene for improving the reading ability of children from poor homes is the "Effective Schools" movement. Springing from several independent sources in the early 1970s (Purkey & Smith, 1982; Clark, Lotto, & Astuto, 1984), the main thrust of the work is the finding that some schools (mainly at the elementary level) serving low-income neighborhoods succeeded in promoting student achievement far above predictions. The methods were generally to look for outliers, and then examine the more effective schools for

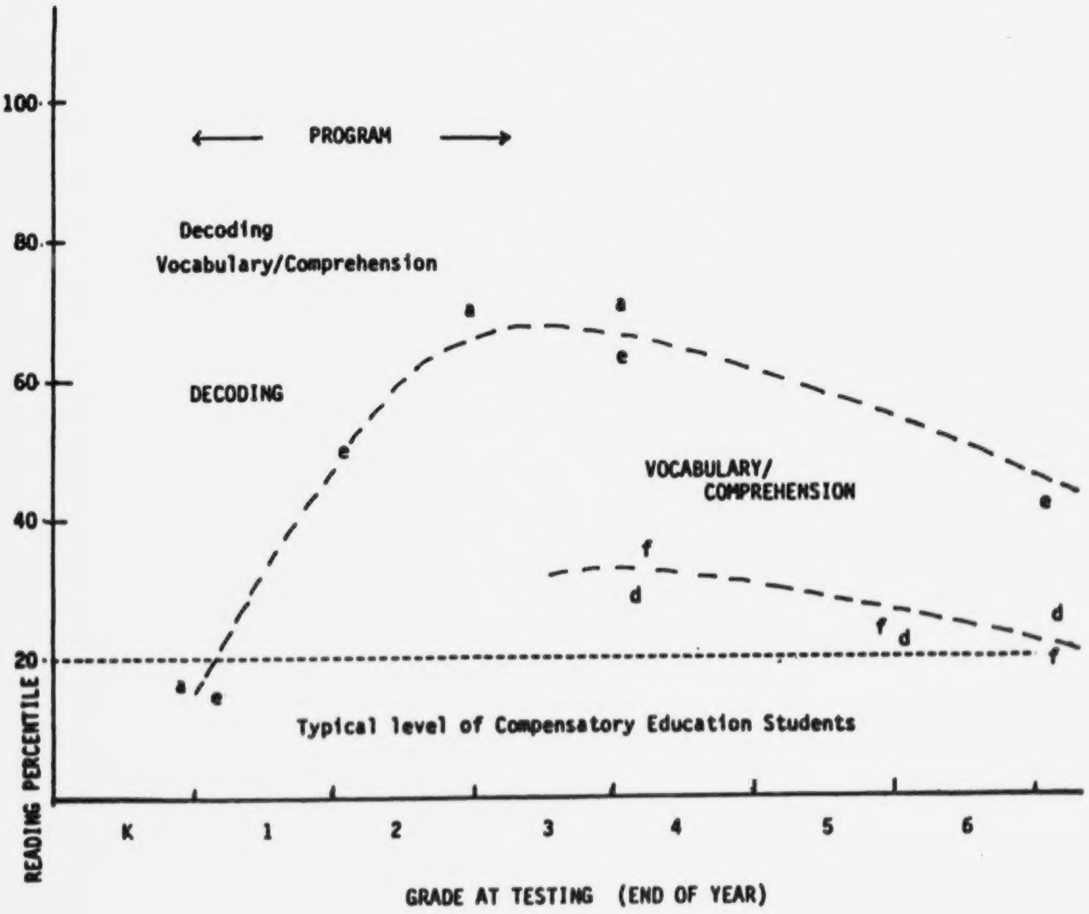

Figure IV-3. Aggregated Data from Becker-Gersten

traits that distinguish them from their less successful counterparts.

Purkey and Smith (1982), Clark et al. (1984), MacKenzie (1983), and Cuban (1983), inter alia, have provided extensive and detailed analyses of this literature, and I will not reiterate their work here. The critical features generally include a stress on leadership, a concentration on academic objectives, high expectations for all students, and continuous monitoring of performance. The operationalization of these features varies from one study to another, but the general character of the items on the list makes sense to me. Virtually all studies rely on multiple choice tests as the primary indicator of effectiveness—a weak reed, in my opinion.

The studies are subject to the problem that plagues most correlational work: which are the critical causal variables, and how can one manipulate these to effect change? Of the several efforts to improve schools based on this model, at least those with which I am familiar, the barriers to successful implementation have proven rather substantial. Clark et al. (1984) put the matter thusly:

> Why effective schools exist, are sustained, fail to emerge, or fail over time is unclear. Exogenous shocks to, and support mechanisms for, schools and systems undoubtedly assist in the creation of more effective schools. The key, however, lies in the people who populate particular schools at particular times, and their interaction within these organizations. The search for excellence in schools is the search for excellence in people. (p. 50)

The difficulty at present is that we seem constrained to a "search for excellence." Instead, we should aim to create it. The needs for human capital and the goals of equity suggest that a primary task for education in the United States is the development of effective mechanisms for fostering excellence in the people who populate our schools, regardless of the backgrounds from which they come (Gardner, 1984).

In Summary

After a quarter-century of sustained and earnest effort by school people, significant allocation of Federal resources, and substantial amounts of educational research on the matter, the correlation between socioeconomic status and reading achievement remains a basic reality in American schools. One reaction to this state of affairs is acceptance—the relation is something that we have to live with, even though the consequences may be troublesome for whatever reason.

In my own thinking, I am not convinced that the correlation needs to be viewed as a constant. Present programs of curriculum and instruction appear to be significantly off the mark when gauged against the broader reaches of literacy as I have described the concept. Youngsters whose parents are better educated and are able to spend time and other resources to promote growth in literacy—such youngsters are at a multiple advantage. For them, the school serves to multiply pre-existing differences.

This state of affairs is reinforced by a number of forces: curriculum materials, textbook publishers, teacher and administrator training programs, state and district guidelines, testing programs, and the inertia of practices and conventions that have been in place for decades. The situation need not be as it is, but change will not come easily.

I am inclined to believe that significant change is possible, but that it most likely will spring from activity at the local elementary school site, the consequence of professionalization of the school staff, teachers, and administrators. Federal and state policy can be redesigned to promote this goal; directing resources (and accountability) to the school site rather than to the student would be a major advance. I would urge that any such modification be carried out in stages; try several variations in a limited number of settings and monitor the results. Rivlin's (1971) concept of planned variation seems as sound today as it did more than a decade ago.

Another recommendation is the re-establishment of a strong Federal and state role in evaluation and monitoring. Local educational agencies tend not to be reflective; they have too many things to do to stop and think. They experiment and collect data only in response to mandates. Until the culture of the school changes, external agencies will be the primary vehicle for promoting systematic school improvement, and for establishing networks to share information about such efforts.

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TEACHING THINKING TO CHAPTER 1 STUDENTS

by

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TEACHING THINKING TO CHAPTER 1 STUDENTS

What is it we want most for students to gain through school? We undoubtedly would agree that it is the ability to manage their lives on their own, competently, considerately, and productively.

What is it that we try hardest to teach to students in school? We undoubtedly must agree that it is reading, writing, mathematics, social studies, and science.

What is the underlying match between our consensual goals and our conventional curriculum? That is, why do we teach the things we do? There are, of course, several answers. First, within these disciplines there lie certain basic survival tools, certain knowledge and skills that all adults ought to have. Beyond that, there are also, for some students in some of these disciplines, the beginnings of what may become career-specific knowledge and skills. But we would argue that, for the random student, the real motive for including any particular topic in the curriculum runs deeper. The real motive, we would argue, derives from the potential value of that topic as a medium for teaching the students about different perspectives and modes of thought that they might apply to their own worlds.

If this is indeed the major goal of our curricular content, then it is not, in the current educational context, serving its purpose. I am willing to assert this on a single argument: The very idea that the real purpose of immersing students in such stuff is to teach thinking is strictly an adult insight.

When I was a student, even a high school student, I operated on the beliefs that the reason for studying history was to memorize the facts, the reason for solving math problems was to get the right answers, and the reason for writing compositions was because we had to. I was not a bad student, and I do not believe these attitudes were atypical. To the contrary, I believe they are very typical of students, now as well as then.

If we truly intend our course materials to be the vehicles as well as the objects of thought, then that goal should not fall into the category of an adult insight. Indeed it should not be an insight at all. It should be obvious, and it should be obvious to students while they are in school; while they are trying to learn what we hope they will have learned by the time they get out.

In this paper, I will discuss ways that we might better teach students to think. The point of my preface is to make clear that, although this goal is currently all the rage, it is neither revolutionary nor flaky. The development of thinking skills has long been a central if somewhat elusive goal of our pedagogical agenda.

The current interest in teaching thinking has been provoked by the onset of the information era, supported by recent advances in cognitive theory, and begged by the results of domestic evaluations and international comparisons of our students' higher-order cognitive skills. In spirit, the movement has been directed more towards fostering excellence than overcoming the opposite. Yet there is the hope that, as the issues become better understood and the curricula multiply and mature, it will yield effective methods for correcting the special problems of low-achieving students.

The Current Status of Curricula on Thinking

In this section, I will provide an overview of existing curricula on thinking skills. I will not attempt a program-by-program description and evaluation of these efforts as such reviews already abound in the open literature (e.g., Chance, 1986; Chipman, Segal, & Glaser, 1985; Costa, 1985; Nickerson, Perkins & Smith, 1985; Segal, Chipman & Glaser, 1985). Instead, I will treat the curricula as a group, doing my best to describe their common assumptions, goals, and problems.

The fundamental assumption motivating all curricula on thinking is that there exists a certain set of skills or processes that are common to thinking in general, regardless of person, domain, or purpose. The common goal of the curricula is to teach those processes and, in that sense, all fall under the general rubric of process-oriented curricula. In terms of approach, however, they subdivide into two groups.

Within the first group, the lessons are built around complex "ecologically valid" materials such as real-world conundrums, specially written stories about the true-to-life problem-posing environments and problem-solving lessons of model compeers, the students' own writing or schoolwork, or even the contents of Great Books (see Costa, 1985). The processes targeted by this first group center on what Paul (1984) has termed "macrological skills," such as creativity and the ability to deal with complex information and multiple points of view.

Within the second group, the lesson materials are abstract, similar to those found in standardized psychometric tests of aptitude: dot matrices, geometric figures, and simple lexical or pictorial multiple-choice items. The processes targeted by this group of programs center on what Paul has termed "micrological skills," such as observation, classification, and sequencing.

A question of primary interest, for both theoretical and practical reasons, is what are the basic and universal processes that these curricula collectively endorse. The task of generating a coherent answer to this question is made difficult, but not impossible, by the cross-program differences in the levels or complexities of the targeted process. However, there are other obstacles to this endeavor. First, and perhaps most surprisingly, the curricula are not uniformly explicit about the processes they are intended to develop (and this is somewhat independent of whether the processes are named or numbered). Second, even when lists of processes are provided, they often reflect a sloppy partitioning of the potential space. As one example, process lists for the Instrumental Enrichment curriculum cite logical reasoning as distinct from inductive and deductive reasoning (Link, 1985; Chance, 1986). As another, among the 60 skills comprising deBono's CoRT Thinking Materials (1975), there is considerable overlap, e.g., (Consider All Factors, Input, Expand and Information), (Opposing Points of View and Examine Both Sides), and (Objectives, Define the Problem, Target, and Purpose). Third, where process overlap clearly does exist between programs, it is often disguised by differences in nomenclature. Thus, what one calls divergent thinking, another calls lateral thinking; what one calls sequencing, another calls operational analyses, and so on.

At a more general level, the vast majority of the programs are directed toward developing students' analytical and logical acumen. But even here, there are ardently voiced differences of opinion. Paul (1984) argues that programs intended to develop such "critical/analytic" thinking skills can be, at best, of limited, short-term value. What students need most, he argues, are "strong-sense" thinking skills, skills that support the dialectic, that generate fair-mindedness and reasoned judgment. These skills, he continues, are based on principled and not procedural thought; they represent a different mode of thinking from that which is emphasized by the critical/analytic approach and cannot be developed through any direct extension thereof.

Edward deBono comes down on the value of critical thinking and logic with at least as much force:

> ...as the teaching of thinking becomes fashionable, there is the serious danger that educators will turn to the only sort of thinking they know: critical thinking.
>
> The emphasis on critical thinking has long been the bane of society and education. (1984, p. 16)

deBono then asserts that what students lack most are creative thinking skills; to master these, they need training in perception. His argument is that:

> If the perceptions are inadequate, they cannot be put right by an excellence of logic. Indeed, there is a real danger that we accept an error-free argument as correct when the logic may be correct, but the perceptions on which it is based are grossly faulty. (1985, p. 367)

Despite the apparent disarray and disagreement, I will argue that there is, in fact, considerable commonality of goals across these programs. I would agree--I'm sure we all would--with Paul's (1984) position that students need to develop the sort of critical but open-minded, flexible, and nonegocentric thinking skills of the dialectic. On the other hand, I would assert that the only rational path to these abilities is through the critical and analytic skills that he rejects. Except to refer to roughly 3,000 years of philosophical scholarship on the issue, I offer no further discussion on Paul's argument.

Similarly, I must agree with deBono, that perceptual inflexibility or a fixedness on bad information is a major cause of irrationality and a major obstacle to creative or productive thinking. On the other hand, short of perfect knowledge, logic is the only recourse we have for detecting the incompleteness or inconsistencies of our perceptions. Actually, deBono himself knows this perfectly well. He acknowledges it time and again in his writings. Moreover, his own curriculum, the CoRT thinking program, is focused on the logical, analytical skills necessary for evaluating one's information and perceptions. DeBono, in short, differs more in posture than stance from the other program developers.

In the final analysis, the major difference between programs is that with which we began: the difference in the levels of the targeted processes and principles (macrological versus micrological) and the nature of the materials (abstract versus real-world) through which they are exercised. In terms of pedagogical goals, even this distinction is empty. First, as mentioned above, the development of macrological processes presumes operational knowledge of the micrological growth; no one would argue to the contrary. In terms of pedagogical effectiveness, however, the two approaches may differ significantly.

A glance at the recent literature suggests there exist scores of programs on thinking skills to choose from. In fact, if one restricts attention to those aimed at school children (as opposed to pre-schoolers, college students, or adults), there really aren't very many. Of these, I will base the discussion in the next section on only six. I have selected these six for the simple reason that they were the programs about which I was able to obtain the most information.

The six programs fall, three and three, into the categories of macrological and micrological. The three macrological programs are CoRT Thinking Materials (deBono, 1975), Philosophy for Children (Lipman, Sharp, & Oscanyan, 1980), and The Productive Thinking Program: A Course in Learning to Think (Covington, Crutchfield, Davies, & Olton, 1974). The three micrological programs are Instrumental Enrichment (Fueurstein, 1980), Intuitive Math (Burke, 1971), and Think (C. Adams, 1971). One of the six programs, Productive Thinking, was designed for fifth and sixth graders. The rest were designed for grades three or four and up.

Later in the paper, I will describe a seventh program, Odyssey: A Curriculum for Thinking (M. Adams, 1986). Like most of the others to be discussed, Odyssey was designed for students in grades four and up. It differs from the others, however, in offering more balanced coverage of the micrological/macrological continuum.

What Works and Why?

The question of what works would seem to be an easy one to answer. One need only examine the evaluation data, right? I regret to report that the evaluation data on these efforts do not allow straightforward comparisons. Where data exist and are easy to obtain, they are often flawed in design and control. The good, if qualified, news is that virtually every reported evaluation includes evidence of some gains, and amidst the various evaluation efforts there are also some extremely positive results.

Even if we put on our blinders and look only at these positive results, there is room for disappointment. To a greater or lesser extent, at least one of the following limitations besets each of the curricula: substantial gains tend to show up only for some students, under the tutelage of only some teachers, and only on tests that are closest in structure and content to the course itself.

In this section, I will address the question of why the courses are more and less effective. I will focus on each of the limitations cited above. As I do so, I will pay particular attention to the distinction between macrological and micrological approaches and to the special needs of Chapter 1 students.

Of the three limitations, the most disheartening is the tendency for significant gains to show up only on tests that are highly similar to the curricula in content and structure. What this means, in a nutshell, is that transfer or generalization of the processes taught in these courses is limited. Yet, transfer is the primary goal of a course on thinking. If the processes don't transfer, they cannot even be called thinking. They can be called learning, or memory, or habit, but not thinking. The purpose of a course on thinking is to enhance students' abilities to face new challenges and to attack novel problems confidently, rationally, and productively. For Chapter 1 students, it is, moreover, to create the intellectual leverage to catch up and move on.

Whether to choose wisely among existing programs or to invent new ones, an understanding of the factors that promote and inhibit transfer is of first-order importance. My own conviction is that when the mind resists doing something that we believe to be intelligent, it is almost always because it is giving precedence to some conflicting but more important behavior. I shall now argue that the mind's apparent resistance to transfer is an exact case in point.

Recent research in cognitive science converges on the conclusion that the human mind is nothing like a piecemeal catalog of knowledge. When you learn about a topic, your memory does not just store away a list of all of the observations, facts, and events about which you have learned. Instead, it stores them away in an intricately interconnected bundle. The interconnections capture the various relationships between those observations, facts, and events that you considered while learning about them. The memory structure created from the interrelated bundle of information you have acquired about any given topic is called a schema (plural: schemata).

Schemata are essential to our ability to understand what we see and hear. For example, if I told you that I had a big dog named Fido, you would, by virtue of your schema about dogs, readily infer that Fido has four feet and fur, that he barks, that he is my pet—you would even have a pretty good notion of how big he might be. If I told you that Kathy, for reasons of genetics, was born without feet, you would feel very little compassion--if you knew she was a goldfish. If I told you that the man who had been sitting across the room from me walked out without leaving any money, you would wonder what in the world I was talking about--unless you knew I was in a restaurant.

Thus, schemata serve to organize and fill out the scant information we typically receive about the world. They are the means by which we are able to use our knowledge and experience to make sense out of raw ambiguity and to find significance in a gesture. But, notice: it was essential to know that Kathy was a goldfish; it was essential to know that I was in a restaurant. The interpretive advantage of the system depends upon your finding the appropriate schema through which to interpret the information at hand.

The goldfish and restaurant examples point up one more important feature of the system: schemata bundle together information that has been related in one's experience; as a consequence, they also separate information that has not. This partitioning of memories by schemata is also generally beneficial. To see why, let us again consider an example. Imagine that you are reading about John Dean in All the President's Men (Woodward & Bernstein, 1976). Not once, as you read along, do you confuse "John" with King John, Pope John, John Cage, or John who was in your fourth-grade class. Not once do you pause to wonder if his family makes pork sausages or if his brother was killed in a car accident. On reading that John was a Baptist, you do not take him to be John the Baptist; you do not even consider the possibility. The point is that when you are thinking within a schema, your thoughts rarely wander to another, no mater how suggestive the cues.

Thus, we see that this partitioning of information by schemata is to also crucial to cognitive coherence. Information that has not been interrelated in your experience is not interrelated in your memory; it is coded in separate schemata. This protects your thoughts from spurious associations and the mental chaos that would result therefrom. In the interest of teaching for transfer, however, an unfortunate side effect is that it also inhibits you from jumping between schemata, even when so doing would give you the most productive edge on a problem.

All of this makes for a very persuasive argument as to why content-oriented efforts to teach thinking skills--i.e., efforts to do so in conjunction with some particular content area such as science, social studies, or arithmetic--are unlikely to succeed. Specifically, if the thinking skills are introduced and developed through specific content, they will, per force, be remembered, understood, and--importantly--accessible only in relation to that content. The resulting schema will hang together as a richly interconnected complex of knowledge about the topic. Here and there, embedded within it, will be a variety of analytic or heuristic processes and principles. From any other domain, it may be possible to access these processes and principles through explicit and pointed analogy. It also may not, depending on how integrally they are encoded in terms of the content. But their spontaneous transfer cannot be expected. If the goal of the course is to teach thinking, if it is to develop a schema that is about thinking, then the course should very consistently and very unambiguously be about thinking.

Less obviously, perhaps, the foregoing discussion of schema theory also explains why a strictly abstract, micrological approach is unlikely to produce transfer. Within the discourse on thinking skills, such approaches are occasionally described as being "content-free." What is meant by this is that the targeted principles and processes are introduced and exercised through such materials as dot matrices, abstract line drawings, and so on. The nature of the materials is, in turn, held to be the key to transfer: because the principles and processes are developed in the abstract, they should be conceptually neutral and, therefore, equally generalizable to all applicable problem domains.

The argument sounds good, yet there must be something fundamentally wrong with it. The disappointing transfer effects of the micrological curricula are repeated in miniature across scores of training and transfer studies in the psychological literature.

The clue is found in the term "content-free." Can a curriculum really be content-free? The answer is no: The content of a curriculum is the medium of instruction; it is the materials to which the targeted processes and principles are applied; it is the materials through which they are defined and exercised. In terms of content, the difference between content-oriented and content-free curricula is not whether or not they have it; it is whether the content they do have consists of traditional classroom matter or, say, abstract graphic designs of some sort. Most importantly and whichever the case, the content of the course defines the context within which the principle and processes will be retained and through which they may be recalled. If the goal of the course is to teach thinking and, therefore, to maximize transfer, the materials or content through which the course is developed should reflect as diverse and broadly useful a set of problem domains as is possible.

In fact, none of the programs under discussion falls cleanly into the category of abstract and micrological. The Instrumental Enrichment program may come closest; its own developers describe it as "content-free" (Fueurstein, Jensen, Hoffman & Rand, 1985). Yet integral to the full implementation of the Instrumental Enrichment program is a process called "bridging." Each lesson in the Instrumental Enrichment program focuses on one or two general principles, such as "a good strategy for self-checking is to reverse an operation" or "when two stimuli are very similar, more careful analysis is needed to distinguish the differences" (Bransford, Arbitman-Smith, Stein & Vye, 1985, p. 188). Bridging is to occur at the end of each lesson: It consists in having the students produce and critique examples from their own experience that illustrate the relevant principle. Bridging is thus the key to transfer in the Instrumental Enrichment program. Yet, relying as it does on the students' own reminiscences, it must lack the efficiency and scope that a methodically designed set of generalization exercises could achieve. Evaluations of the Instrumental Enrichment program indicate that it does quite well at increasing students' nonverbal IQ scores; as a rule, however, it has not resulted in significant improvements or transfer to general school achievement or nonschool cognitive tasks; interestingly, exceptions to this rule tend to be had where the students' instructor for Instrumental Enrichment is also their instructor for other coursework (Savell, Rachford, & Twohig, 1984).

Each of the other two micrological programs, Intuitive Math and Think, is built around six basic skills (the descriptors in parenthesis are mine, added for clarity):

1. Thingmaking (concept formation);
2. Qualification (description);
3. Classification;
4. Structure Analysis (part-whole analysis);
5. Operation Analysis (sequencing);
6. Seeing Analogies.

The goal is to enhance the students' thinking abilities by exercising these micrological skills over and over, across a diversity of problems of graduated difficulty. The problems are mostly multiple choice, fill-in-the-blanks, and so on. In format, they thus resemble the abstract exercises of the Instrumental Enrichment program. However, excepting those exercises used for introducing the processes, they are not abstract. Rather, the exercises are designed to connect the basic processes to the content and operations of conventional school subjects: mathematics and language arts/reading, respectively. Thus, although the materials reflect a bit of a shotgun approach to content, they do indeed include considerable content. And, because the exercises are consistently presented and analyzed in terms of the six basic thinking skills, it is likely that the students' memory for the course will accrue as a single grand schema.

Both Intuitive Math and Think were specially designed for remedial work with students in grades 4 and up and have been used quite extensively with below-norm inner-city and Chapter 1 populations. Each has been shown to produce not just significant, but often very impressive growth in the average achievement scores of recipient classrooms as measured by a variety of tests (California Achievement Test, Comprehensive Test of Basic Skills, Gates MacGinitie Reading Test, Iowa Test of Basic Skills, Metropolitan Achievement Test, and Stanford Achievement Test) in studies by Worsham and Austin (1983) and Zenke and Alexander (1984).[11]

In contrast with the micrological approaches, the macrological generally avoid the abstract. Instead, it is through a diversity of face-valid materials and the repeated application of the targeted principles and processes to them, that the macrological approaches seek to maximize transfer.

From the perspective of schema theory, this sounds like the right approach. Nonetheless, for the two most extensively used macrological programs, deBono's CoRT and Covington et al.'s Productive Thinking, evidence of transfer, as measured by improvements on standardized tests, is hard to come by (see Mansfield, Busse, & Krepelka, 1978, and Nickerson, Perkins, & Smith, 1985, for summaries).

There is, on the other hand, a standout among the macrological curricula. This is Lipman's Philosophy for Children. Evaluations of this program with middle school (grades 4-8) children have repeatedly shown it to produce significant gains in reading comprehension and/or logical thinking (see Lipman, 1985, for a summary).

Three explanations might be offered for the effectiveness of Lipman's program as compared to its macrological cousins. First, it is a bit of a hybrid on the micro-macro discussion. Lipman argues that higher-order thinking skills are not essentially different from the basic or lower-order logical processes. They are instead but concatenations of the lower-order processes, ways of using them "collaboratively and concertedly" to higher-order ends (1984, p. 55). In keeping with this, the processes and principles covered in Philosophy for Children move progressively from the simpler to the complex, and, to clarify the simpler processes, many of the accompanying exercises are quite abstract. Despite intentions, however, Lipman is nowhere explicit about the identities of the basic processes, and the exercises designed to enhance them lack something in the way of clear or methodical progression. The program is centered upon and strongest with respect to the macrological end of the continuum.

The second possible explanation for the relative effectiveness of Philosophy for Children relates to its focal reading materials. The reading material, for each course in the program, is a novel: a single, well-written book about the continuing episodes of a small set of major characters with complex but consistent personalities. According to Lipman, the power of this medium is the imaginal invitation of fiction; the student comes to know the characters and their world in a deep sense, to identify and sympathize with them and, thereby, to truly participate in their adventure in thinking about thinking. Lipman is surely correct, yet there may be another feature of the use of novels that is at least as important. It gives Lipman the freedom to introduce, reintroduce, and elaborate each logical process across a diversity of real-world situations, simultaneously ensuring that all such instances will be remembered together, in the single evolving schema for the novel as a whole.

In short, Lipman's courses are designed to build upon themselves both thematically and (though with a little more entropy) logically. In combination, these two features must enhance the likelihood that the resulting product, in the student's mind, will be a single, contextually rich but thematically integrated and logically well-articulated schema. From the perspective of schema theory, this would be the ideal.

The third explanation for the success of Philosophy for Children is less interesting than the others, but cannot be overlooked. Specifically, the program seems best suited for scholastically solid, culturally mainstream classrooms. Sternberg (1984) comments that students from lower-class and even lower-middle-class backgrounds might have trouble relating to the stories. Further, the novels would lose at least interest and cohesion except in the hands of fairly good readers. And finally, the program demands a degree of philosophical sophistication, confidence, and mental agility that may be difficult for any but the best teachers to master. It follows, regrettably, that Philosophy for Children is probably not among the best options for widespread Chapter 1 implementation.

To summarize, I have argued on the basis of theory that for purposes of maximizing transfer, a course on thinking skills should result in a single, well-integrated schema. The schema must be centered on the principles and processes the course was intended to develop, and it must be richly and diversely elaborated with concrete or real-world instances of application. Consistently, from the evaluation data, I have shown that the programs yielding the strongest evidence of transfer are precisely those which best meet these theoretically designated criteria.

Through the discussion of the evaluation data, an additional set of variables has also suggested itself. Specifically, of the more successful programs, none was strictly macrological, and none was strictly micrological; none depended solely on abstract exercises, but all employed them from time to time. Is a mixed approach truly better, or is this coincidence? I will discuss this issue in the next section where consideration is turned to the issue of individual differences.

Before moving on, however, I would like to address a lurking caveat. Every one of the programs producing positive results on standardized tests can be criticized on the grounds that it includes exercises resembling the problems on standardized tests. Conversely, Productive Thinking and CoRT, the two programs producing least evidence of transfer as measured by such tests, are also the two most devoid of test-like exercises. For both Productive Thinking and CoRT experimental or taught students have been shown to exceed controls in ideational fluency on problems similar to those found in the respective curricula. The effects of Productive Thinking have been particularly well researched, often demonstrating gains not just in the quantity of ideas students generate, but further in the quality of their ideas and in their intellectual independence and self-confidence (Covington, 1985; Polson & Jefferies, 1985).

The point is that transfer is a grey scale. Its ultimate metric is decidedly not performance on any particular set of test items, standardized or not. On the other hand, true thinking uncontainably promotes learning, understanding, and more thinking. It thus follows that there is one best measure of the success of such a course. That measure would assess whether impact of the course increases with time, whether students who received the course continue to outlearn, outperform, and "outadjust" their peers who did not. On this question, there is unfortunately very little data (but see Fueurstein, 1980, and Lipman, 1976).

Individual Differences

The second problem besetting courses on thinking skills is that many seem to work only with certain students. For programs that work best with the better students, the problem is obvious: Chapter 1 students tend not to be the better students. However, any insensitivity to individual differences takes on more global import when the target population consists of Chapter 1 students. Specifically, as a group, better students tend to be relatively homogeneous in terms of general knowledge and school skills; by most measures they correlate nicely with themselves and each other. The same is not true of low-achieving students; their knowledge, skills, and interests tend to be unpredictable both within and across individuals.

It follows that the most promising program for Chapter 1 implementation will not be geared to either the best or the worst. Rather, to be successful, it must be appropriate across a broad and complex space of individual differences.

This point spills immediately into yet another argument for teaching thinking skills separately rather than as an adjunct to any conventional content area. That is, to think about history, a student must first know a certain amount of history; to read critically, a student must first read at a certain level; etc. Because they offer their developers so much freedom in selecting and structuring content and materials, process-oriented approaches offer a medium that can be relatively free of such impediments. Process-oriented approaches are therefore your best bet if the students to whom you would like to teach thinking skills are either young or low achievers. Process-oriented approaches are also your best bet if the students differ from one another in their entry levels of achievement--and, do note: pullout or not, they always do.

Of the macrological programs, effective use of Philosophy for Children is, as mentioned above, pretty much restricted to better classrooms. Similarly, Productive Thinking has been used most frequently and successfully with above average students (Chance, 1986; Covington, 1985).

Indeed, of the macrological programs, CoRT alone claims equal useability and success across high ability, low ability, and mixed ability groups (deBono, 1985). The wider useability of deBono's program is owed to the nature of his materials. They consist of problems that have no correct answers, but whose proper airing may involve consideration of a number of factors and points of view, all of which should be available through common sense and common knowledge. Examples of these problems include, "What makes a TV or radio program interesting?" "Mail services lose a lot of money. If you were running these services, what alternatives might you suggest?" and "A father forbids his 13 year old daughter to smoke. What is his point of view and what is hers?" (deBono, 1985). The purpose of the problems is to exercise CoRT's "tools" or thinking principles. The CoRT program includes 60 named principles although, as mentioned earlier, there is considerable redundancy among them. In the main, the principles are directed towards brainstorming, suspending judgment while brainstorming, identifying the positive, negative, and interesting or unusual features of the brainstormed ideas, recognizing different points of view, and putting it all together. In class, the principles are named but not defined except by way of the teacher's chosen examples. For the core of each lesson, the students are divided into groups of four or five. Within these groups, they discuss each problem, giving special attention to the tool of the day. Then the groups report their ideas to the class as a whole. In short, the lessons pivot on appealing problems that involve no reading, no writing, no specialized knowledge, and no wrong answers--just talk, and all kinds of people love to talk. Hence, its universal useability.

But what about its success? DeBono eschews standardized tests--"they are not sensitive to the range of thinking skills in which the CoRT program offers instruction" (deBono, 1985, p. 382). He prefers tests of his own devising, testimonials, and examples. Here is an example:

> I was once teaching a demonstration class of 10-year old children in Sydney, Australia. I asked them whether they would like to be given $5 a week for attending school. All 30 of them liked the idea and gave their reasons for doing so, (buy sweets, chewing gum, comics, etc.). I then introduced the idea of the PMI [a CoRT tool] and asked them to apply this to the suggestion, working in groups of five. After 4 minutes, I asked for their output. They raised the following kinds of issues: Parents would stop pocket money, schools would increase charges, bigger boys would beat up smaller ones--and where would the money come from? Twenty-nine out of the 30 had now completely reversed their opinion. This was without any suggestion from me as to which considerations they should bring to mind. This example illustrates the purpose of CoRT thinking: the use of a simple perceptual framework to bring about a conclusion through exploring the experience in a more thorough manner. (deBono, 1985, pp. 385-386)

I have to say that I am underwhelmed by the quality of thought shown in such examples.

I have seen the CoRT program in action. I was highly impressed with the enthusiasm and the mental activity it provoked in the classroom, and am comfortable with the idea that it generally does so. I believe that the CoRT program may exert a strong effect on the attitudes of low achievers, that it may give them a genuine sense of their own permission to think. Such an outcome can only be considered invaluable and should not be downplayed. On the other hand, I remain skeptical about the extent to which the program hones its students' critical or analytic abilities.

The CoRT program aside, it is the micrological courses, Instrumental Enrichment, Think, and Intuitive Math, that have been used most often and most successfully with low-achieving students. I suspect that the apparent advantage of the micrological over the macrological programs is real and derives from the characteristic difference in materials as well as structure. Turning first to materials, all of the micrological programs rely on abstract materials at least for introductory purposes. At a cognitive level, there are two advantages to such materials. First, they offer a means by which the targeted processes and principles can be explicated and exercised without presuming any specialized background knowledge on the part of the students; again, this feature has special merit when the students are of low or mixed achievement levels. Second, abstract exercises, as they are relatively meaningless by definition, remove the conceptual distraction potentiated by content-rich exercises. They thus allow for the instructional exchange (and the resulting memories of it) to be unambiguously focused on the processes and principles at issue.

In terms of structure, the salient aspect of the micrological approaches is that they include explicit instruction and labeling of the micrological principles and processes. Because of this, they are prepared with both the conceptual and terminological scaffolding to analyze and discuss the macrological issues explicitly when they do arise. This is seen as an advantage on two dimensions. First, it provides the necessary components for sound direct instruction. The definitive feature of direct instruction, whether achieved through guided practice, modeling, Socratic inquiry, or discussion, consists in the explicit treatment of the substeps of a thought process and of the considerations pertaining to when and why each of those substeps is appropriate. Instruction of this kind is widely held to be an especially effective means of developing students' appreciation of the intellectual processes as opposed to the contentive products of a discipline (Anderson, Hiebert, Scott, & Wilkinson, 1985; Pintrich, Cross, Kozma, & McKeachie, 1986; Rosenshine, 1986). Without explicitly addressing the substeps of a complex process, the best the macrological approaches can offer is indirect requirements for their exercise (see deBono, 1985). Second, the explicit articulation of the microprocesses, first by themselves and later as components of more complex or concrete challenges, should lead to a stronger core as well as richer and thus more traversable interrelations in the schema the students develop.

Even so, an equally strong but different case can be made for both macrological and content-oriented approaches, especially as they build upon information of real-world and scholastic relevance. The strong proponents of this case are cognitive psychologists, and the reason for their adamancy came as somewhat of a surprise to themselves. For the last 25 years, the field of cognitive psychology has been devoted to understanding the nature and limits of people's intelligent behaviors. Until very recently, the research had been focused all but exclusively on all-purpose processing modes and capabilities. Then, due to a variety of forces--the influence of computer scientists in the field of artificial intelligence, the resistance of language to being usefully modeled in the abstract, the uncontrollable influence of semantics on memory phenomena--researchers began to attend to the effect of knowledge on their experiments instead of trying to cancel it out.

The results have been persuasively summarized by Robert Glaser (1984). In essence, the various processing modes and capabilities that had already been postulated were reaffirmed; they were every bit present and generally behaved as expected in these new, knowledge-rich, experimental designs. The exception was that they differed negligibly across individuals: Whether comparing experts and novices in some domain, high and low scorers on aptitude tests, or even adults and children, the differences in performance proved due, most of all, to differences in knowledge.

All together, the research on knowledge and performance led psychologists to the theory of schemata described earlier in this paper. In particular, results such as those just described virtually force the conclusion that improvement in cognitive skills...

> ...Takes place through the exercise of conceptual and procedural knowledge in the context of specific knowledge domains. Learning and reasoning skills develop not as abstract mechanisms of heuristic search and memory processing. Rather, they develop as the content and concepts of a knowledge domain are attained in learning situations that constrain this knowledge to serve certain purposes and goals. Effective thinking is the result of 'conditionalized' knowledge--knowledge that becomes associated with the conditions and constraints of its use. (Glaser, 1984, p. 99)

A large proportion of the Chapter 1 population is comprised of children who, for reasons of ethnicity, poverty, or parental education, fall outside the mainstream culture of our society. The implication of these issues for such children is so important that it bears restatement.

Cognitive theory and research indicate that the way in which we perceive and interpret our worlds depends most of all on the worlds we have experienced in the past. Our minds can be described as the organized memories of whatever we have experienced, either consciously or tacitly. Thinking, understanding, and learning can be described as processes of retrieving or constructing interrelations among subsets of our knowledge that coherently model the phenomena under consideration.

If this view is correct, then cross-cultural differences in achievement are to be expected. Our knowledge must vary at several different levels with the culture in which we live. At the most basic level, the phenomenal world may differ markedly across cultures, and even where it overlaps, the full or contextually elaborated meanings of particular objects or events may nonetheless differ significantly. To this extent, our direct knowledge of the world, both simple and complex, will be culture specific. Our cultural environment also influences the kinds of knowledge we are likely to gain through vicarious experiences. Culture shapes not only the topics but the social functions of the oral language around us. Further it determines the nature and availability of other sources of vicarious experience, such as books, newspapers, and television programs.

Thus, our cultural environments are strong determiners of the kinds of experiences to which we are haphazardly exposed. In addition, however, there are social differences between cultures which must affect our cognitive development in a more systematic way. Specifically, cultures differ in the uses they make of thinking and knowledge. This impacts not only on the kinds of thinking and learning a culture fosters, but also on the attitudes it fosters toward thinking and learning. In a technologically sophisticated society, thinking and learning are prize commodities. They are highly valued both socially and on the marketplace and, like other prize commodities, are sought in their own right. That is, the technological society carries an atmosphere that is not only conducive to thinking and learning but, further, to thinking and learning about thinking and learning.

Our educational system is both the product and promoter of this cultural syndrome. It is our institutionalized best effort to provide for our children within the system--to pass on our culturally endorsed fortunes, as it were. We have designed our formal educational system to expand and elaborate on those skills and values which our children have, in any case, been reared to accept and pursue. By opening the educational system to children with different backgrounds, we offer to them the opportunity to move into and up in our social structure. The problem is that to the extent children lack the knowledge and values that the system presumes, it must be extremely difficult for them to assimilate those which it offers.

A good course on thinking skills would be an invaluable boost for such children. Ideally, it would give them the critical, analytic, and organizational abilities and attitudes to make the most of the information they do have and will be exposed to. But, for maximum impact, the course must be content-rich. For Chapter 1 students, the provision of content is of utmost importance in itself; it is a fact of intellectual life, that the more you know, the more you learn. Further, harkening back to the section on transfer, the content provides the links through which the learned thinking skills will be activated and applied to issues and challenges encountered beyond the boundaries of the course itself.

Returning to the programs with an eye toward the issue of individual differences, Think and Intuitive Math seem the best choices for Chapter 1 implementation. They are structured for assimilation by low achievers, and their content has been carefully contrived to connect to and enhance the students' performance in language arts and math, respectively.

On the short side, these two programs might be criticized for relying too much on short-format exercises. According to Toczynski (1984), one negative of this spoon-sized delivery system is that the exercises are occasionally found to be simplistic, repetitive, and boring (although the harder exercises are reported to be exciting). Another is that by relying on short-format exercises, which are inherently limited in complexity or dimensionality, the program moves too little toward the dialectical and macrological skills that support more general intellectual independence rather than just grade-level studentship. Moreover, the programs might be criticized for being too closely tied to the academic regimen they seek to enhance and, in particular, to the basic skills of those regimen.

Of particular relevance within this section, the two programs are by no means indifferent to students' entry levels of achievement. Nor, I suspect, could they be, given their concentration on the remediation of domain-specific skills. Instead the programs are deliberately tailored to students' entry levels of achievement. Each has been developed across a series of levels, and Innovation Sciences, Inc., provides pretests for determining the most appropriate level for any given group of students. In keeping with this, the programs appear most successful under a statistical lens: they very often advance the average test scores of the classes with whom they are implemented. However, whether for reasons of pretesting error or non-universal assumptions about the sorts of skills students need, there are inevitably individuals within groups and occasionally whole groups of students for whom the programs produce little or no measurable impact. These drawbacks aside, Think and Intuitive Math look quite attractive for Chapter I purposes. On average, they do seem to arm students with not just the basic skills but, further, the basic understanding and attitude to move on.

Useability by Teachers

The third limitation, that of how easily the course can be implemented, is not a direct problem for Chapter 1 students. Indirectly, however, it is critical. To invest in their widespread dissemination and, thereby, to gamble the time and money they require, we should expect the curricula to be usable and effective in the hands of whichever teachers draw the straw. And we should expect them to be so without requiring undue time for lesson preparation and management in or out of class.

The profession of a teacher is teaching. A good teacher is invaluable precisely for her or his ability to understand, manage, and communicate with students. A well-designed curriculum should support those efforts, not divert them.

I would argue that it is fundamentally irresponsible for a curriculum to list major activities while expecting teachers to invent the materials or the substance of the lessons for getting them done. Of course, there are teachers who like to design their own lessons and materials. Of course, every teacher occasionally runs across materials, topics, or ideas that she or he wants to add to the lesson plan. Of course, all teachers regularly modify and adapt curriculum materials to best suit the interests and abilities of their own students.

However, one should not expect teachers to produce the bulk of their instructional materials any more than one expects medical doctors to invent medicines, actors to direct their own movies, or Presidents to write their own speeches from scratch. To be sure, there are some teachers, doctors, actors, and Presidents who do such things. But whether they do them is really quite independent of how well they carry out the challenges of their principal profession.

By extension of this position, I would further argue that a well-designed curriculum should not require large amounts of inservice training. A heavy inservice requirement is inconsiderate of teachers' time and school budgets. And worse, it is a symptom that the success of the curriculum depends not on the guidance and materials it provides, but on the individual efforts of teachers to interpret and go beyond what it provides.

The considerateness of curriculum materials is even more important if the topic of the course is new. When designing a curriculum in a traditional domain, such as grammar or geography, one can afford to be a little sloppier: teachers will readily fill in the gaps, drawing on their own prior coursework and knowledge of the domain. In contrast, most teachers have not had many courses on thinking skills. To the extent that a curriculum on thinking skills is not self-contained and comprehensible, it would be almost reasonable for teachers to throw up their hands and quit it.

Of the curricula under consideration, both Philosophy for Children and Instrumental Enrichment require lots--on the order of weeks and months--of teacher training, and the outcomes of each appear highly sensitive to teacher variables. For the CoRT program, teacher training is recommended, but deemed unnecessary; on the other hand, even deBono (1985) acknowledges that the success of the lessons must be highly dependent on the teachers' style and mental flexibility. Other than reading through the appropriate sections of the teacher's guide prior to each lesson, Productive Thinking requires no special preparation of teachers; but again, its effectiveness seems to be quite sensitive to individual teacher variables. Finally, both Think and Intuitive Math suggest one week of pretraining for teachers, although effective use of the program by regular classroom teachers has been reported after as little as one day of preparation (Worsham and Austin, 1983). There is a trade-off here: in-lieu of being training intensive, both Think and Intuitive Math are materials intensive. The implementation of these two programs requires purchase of a whole package including such things as individual student work books, "moderator guides" including teacher scripts and answer pages, response pads, tape cassettes, student progress records, and red, white, and blue counters.

One More Program: Odyssey

I turn now to a brand new program entitled Odyssey: A Curriculum for Thinking (M. Adams, 1986). The program was developed through a collaborative effort of Bolt, Beranek, and Newman, Harvard University, and the Venezuelan Ministry of Education. The project was funded by Petroleos of Venezuela and sponsored by Dr. Luis Alberto Machado, then Minister for the Development of Human Intelligence of the Republic of Venezuela. I give the program special attention not just because it is our own and I'm proud of it, but further because (1) it worked as measured by a team of evaluators in whom I have total confidence, (2) it is structurally unique, and (3) it was designed and implemented in the face of exaggerated forms of virtually every curriculum-breaking problem one might imagine.

Problems Confronted

The experimental implementation and evaluation of the program was conducted solely in Venezuelan "barrio" schools, a designation indicating that the students came from homes with low socioeconomic status and minimal parental education. The course was administered exclusively to seventh-grade classes, but the students ranged from 10.6 to 17 years of age. The students, moreover, differed at least as widely from one another in school skills, general knowledge, motivation, social behavior and virtually any other relevant dimension one might name. The teachers with whom we worked, ranged from very marginal to excellent, and we knew this would be true of the teachers who might be asked to use the curriculum in the future. Because the goal was to develop a course that could be widely disseminated in Venezuela in our absence, it had to be self-contained; it had to be designed such that it would be usable without extensive teacher training and such that it would resist deleterious transformations in transmission. Finally, because of the funding system in the schools, we knew that future use of the course in Venezuela would be generally precluded unless the associated materials were inexpensive to purchase.

Curriculum Design

Odyssey is, relative to the previously discussed programs, a come-lately effort. This was a tremendous advantage in terms of defining its structure, as we had both the wisdom of hindsight on previous efforts and the benefit of contemporary theory and research in education and cognitive psychology.

From the outset, our challenge in writing the Odyssey curriculum was defined. We sought the focus, analytical force, and pedagogical range of the micrological approaches: we wanted to convey, very explicitly, both the nature of the basic processes and their interrelationships; and we wanted to reach the least advanced students without losing the most advanced. We sought the epistemological leverage of the content-oriented approaches: we knew our thinking skills had to be thoroughly enmeshed in conceptual knowledge of direct scholastic or real-world relevance. We sought the intellectual complexity and dialectical reflection of the macrological approaches. And we wanted the skills we taught to transfer, to be recalled and applied to whatever amenable challenges the students might encounter beyond the confines of the curriculum itself.

To meet this challenge, we exploited the theory of schemata and developed a content-rich but process-centered design within which the macrological is systematically built upon the micrological. In overview, the curriculum we produced consists of six lesson series or books. Each lesson series is divided into two or more units, representing subtopics. The units themselves are comprised of three or more one-hour lessons. Table IV-1 provides a list of series and units and, in parentheses, the number of lessons in each unit. The table

TABLE IV-1: Contents of *Odyssey*

Series and Unit Titles and Descriptions		Number of Lessons
LESSON SERIES I: FOUNDATIONS OF REASONING		21 Total
Unit 1:	Observation and Classification	6
	Using dimensions and characteristics to analyze and organize similarities and differences; discovering the basics of classification and hypothesis-testing.	
Unit 2:	Ordering	5
	Recognizing and extrapolating different types of sequences; discovering special properties of orderable dimensions.	
Unit 3.	Hierarchical Classification	3
	Exploring the structure and utility of classification hierarchies.	
Unit 4.	Analogies: Discovering Relationships	4
	Analyzing the dimensional structure of simple and complex analogies.	
Unit 5.	Spatial Reasoning and Strategies	3
	Developing strategies to solve problems of resource allocation via tangrams.	
LESSON SERIES II. UNDERSTANDING LANGUAGE		16 Total
Unit 1.	Word Relations	6
	Appreciating the multidimensional nature of word meanings.	
Unit 2.	The Structure of Language	5
	Discovering the logic and utility of rhetorical conventions.	
Unit 3:	Information and Interpretation	5
	Analyzing text for explicit information, implicit information, and point of view.	

LESSON SERIES III:	VERBAL REASONING 20 Total	
Unit 1:	Assertions	10
	Exploring the structure and interpretation of simple propositions.	
Unit 2:	Arguments	10
	Analyzing logical arguments; evaluating and constructing complex arguments.	
LESSON SERIES IV:	PROBLEM SOLVING 18 Total	
Unit 1:	Linear Representations	4
	Constructing linear representations to interpret n-term series problems.	
Unit 2:	Tabular Representations	4
	Constructing tabular representations to solve multivariate word problems.	
Unit 3:	Representations by Simulation and Enactment	4
	Representing and interpreting dynamic problem spaces through simulation and enactment.	
Unit 4:	Systematic Trial and Error	2
	Developing systematic methods for enumerating all possible solutions: developing efficient methods for selecting among such solutions.	
Unit 5:	Thinking Out the Implications	3
	Examining the constraints of givens and solutions for problem-solving clues.	

LESSON SERIES V:	DECISION MAKING	10 Total
Unit 1:	Introduction to Decision Making Identifying and representing alternatives; trading off outcome desirability and likelihood in selecting between alternatives.	3
Unit 2:	Gathering and Evaluating Information to Reduce Uncertainty Appreciating the importance of being thorough in gathering information; evaluating consistency, credibility, and relevance of data.	5
Unit 3:	Analyzing Complex Decision Situations Evaluating complex alternatives in terms of the dimensions on which they differ and the relative desirability of their characteristics on each of those dimensions.	2
LESSON SERIES VI:	INVENTIVE THINKING	15 Total
Unit 1:	Design Analyzing the designs of common objects in terms of functional dimensions; inventing designs from functional criteria.	9
Unit 2:	Procedures as Designs Analyzing and inventing procedures in terms of the functional significance of their steps.	6
TOTAL LESSONS PREPARED		100

also includes brief descriptions of some of the main objectives of each unit.

In the first lesson series, Foundations of Reasoning, each of our targeted thinking skills is introduced through the sorts of abstract teaching materials typical of micrological approaches. Then, through the balance of the course, these same thinking skills are used, and thereby refined, elaborated and contextualized, over and over again, as the means of developing the various macrological and domain-specific challenges of each of the other lesson series.

Our basic position in designing the curriculum was that thinking, in any domain, involves two basic components: information and interpretation. We therefore designed the course so as to develop a set of processes, concepts, strategies, and attitudes that would support the reflective, methodical, and productive exploitation of these two components.

Of these, it was the processes that served as the backbone of the course. That is, it was the processes that stood as the unifying frame of the grand schema we were trying to instill in the students. At the first level or very base of the schema was the process of analyzing information in terms of dimensions (e.g., color) and characteristics or values on those dimensions (e.g., red, blue, green). Around this core, we build four "first-order" processes: classification, hierarchical classification, sequencing, and analogical reasoning. These are called first-order processes because they are in fact nothing more than structures for comparing characteristics within or between selected dimensions.

Thus, the structure of the course consisted, first, in explicitly and methodically developing the process of dimensional analysis. Upon that, we explicitly and methodically developed the four first-order processes. And, finally, upon those, we explicitly and methodically developed as diverse a set of content-specific and intellectually complex extensions as we could squeeze in. As examples, paragraphs were developed as classes of ideas, and larger text structures as hierarchies. Metaphors, allegories, and families of logical and mathematical word problems were analyzed in terms of the implied dimensions of comparison, explicitly identifying the underlying analogies. Complex decisions were undertaken by identifying the dimensions along which the choices differed from one another and then by ordering their characteristics by preference and their dimensions by importance. And, moving toward the dialectic, students were given considerable exercise in identifying the underlying assumptions and implicit information in text; in identifying the goals and points of view of authors and of the characters in stories; in evaluating and redesigning or rewriting inventions, procedures, and information from different perspectives; in revising opinions; and in compiling, interpreting, and evaluating information on complex, ill-structured problems. Through these excursions, we hoped to extend each of the core processes with the particular conditions and constraints required to make them appropriate to a variety of scholastic and real-world applications.

While structured on process, the curriculum was also rich in concepts. Many of these were specific to a particular domain of application (e.g. antonyms, synonyms, and propositional terms) or to the particular content through which an application was developed (e.g., ballast, adherence, and googol). Moreover, we did not shy from introducing new information to the students. To the contrary, within each domain of application, we made an effort to construct examples and exercises that were both rich and diverse in content. The goal was to make the process-schema rich in knowledge, to maximize the variety of contexts from which it might be spontaneously accessed.

Importantly, there were also a few concepts which were methodically raised and elaborated in every lesson series. Each of these core concepts dealt with some aspect of the nature and quality of the information available for interpretation. They included the concepts of explicit versus implicit information, certain versus probabilistic or suggestive information, positive versus negative information, relative versus absolute information, relevance, consistency, credibility, goals, and point of view.

A number of strategies were also developed and used throughout the course. As examples, these included working backwards, the process of elimination, searching for counter examples, systematic trial and error, and constructing tabular or graphic representations. The essential characteristic of strategies is that they help guide the search for our organization of information. They thus differ from processes in that they play no direct or necessary role in solving a problem. On the other hand, used methodically, they can make the solution of a problem much, much easier.

Finally, the course was intended to instill certain attitudes or modes of learning and thinking in the students. These included, for example, a healthy appreciation of knowledge and the rewards of self-discipline, a willingness to explore and analyze information, a readiness to critique one's beliefs and point of view, a strong notion that the structure of everything, from pencils to literary genre, reflects its intended function, and most of all, the conviction that --whatever it is--it can be understood. We tried to reinforce these attitudes at every possible opportunity.

Useability

The thrust of the course was to be conveyed through direct instruction, modeled on the Socratic inquiry method (Collins & Stevens, 1982), and capitalizing on structured discovery. To maximize useability, the classroom procedure for each lesson in the Odyssey curriculum is presented in the form of a complete script. These scripts are not intended to be used verbatim. Their purpose is instead to provide a detailed and highly imaginable model of the sequence of interactive dialogue and activities through which the embedded lesson plans might be achieved. Their purpose, in other words, is to minimize the need for inservice training. They are offered as an efficient, easy-to-understand means for the teacher to build a usable schema of the intended logic and progression of the course.

The teachers' manual also includes several other features designed to increase the comprehensibility and useability of its lesson content. First, each lesson is prefaced with an explanation of its rationale, its objectives, and its conceptual relationship to other lessons in the curriculum. Second, the text of the classroom procedure for each lesson is divided into topical subsections and methodically formatted in a way that visually contrasts or sets off not only teacher queries and student responses, but also instructions to teachers, information to be written on the board, information about the exercises, and key terms. The purpose of this formatting is to give teachers an easy means of recalling the lesson plan while in class, without having to reread the script itself. By glancing at a page, teachers can easily pick out the information they need to remember, where in the lesson they are, what the key points are, and where they are going next. It is our conviction that some such system of reminders-at-a-glance was a critical component of a usable curriculum: in class, teachers' attention and thought should be freed, to the extent possible, for the challenge of managing and stimulating their students.

Finally, the Odyssey curriculum includes within it all necessary texts, exercises, and demonstration materials (with the very occasional exception of such things as paper clips and poster board). Exercises and texts are provided in the student workbooks and reproduced, with correct answers, in the appropriate spots in the teachers' manual. Demonstration materials are bound in the teachers' manual.

None of this is intended to discourage teachers from extending the curriculum as they see fit. To the contrary, we strongly encourage such extensions: The greater the number of ways that the various components of the course are exercised, the greater and more lasting will be its impact. By providing such thorough conceptual and material support within the curriculum, we hope that we have created a base upon which even the least confident teacher will feel invited to build—to draw other materials and problem situations into the course, and to draw central components of the course into their instruction on other subjects.

Evaluation

Within the time span of the Venezuelan project, we could not ask about long-term effects of the course. We did however, do our best to assess the 'immediate depth and breadth of the course's effects. In this section, I summarize the design and results of the evaluation effort but, for a more detailed discussion, you are referred to a recent article in the American Psychologist (Nickerson, Herrnstein, deSanchez, & Swets, 1986).[2]

During the 1982-1983 school year, approximately half of the 100 odd lessons in the course were taught by teachers from the Venezuelan school system to about 450 seventh graders (twelve classes) in barrio schools in Barquisimeto, Venezuela. The twelve experimental classes were selected in conjunction with twelve control classes, matched on school and classroom parameters and, insofar as possible, on students' ages, initial abilities, socioeconomic status, and so on.

To assess the impact of the course, all of the students completed a battery of tests at the beginning and end of the school year. One set of these tests, the Target Abilities Tests (TATs), was designed by us to assess students' mastery of the course material per se. The remainder of the battery, however, was put together with an eye toward assessing the general rather than the specific carryover of the course. That is, these tests were selected not to match specifics of the course but to provide a broad range of aptitude and achievement measures.

Three sets of standardized tests were included in the battery: the Cattell Culture Fair Test (CATTELL), which examines pictorially the abilities to extend series, classify, complete matrices or analogies, and establish conditions; the Otis-Lennon School Ability Test (OLSAT), which presents a variety of word problems and is often used in the U.S. to estimate IQ; and eight achievement or General Ability Tests (GATs). In addition, we collected qualitative assessments of the course from teachers, students, and supervisors and administered some less formal tests of reasoning and writing; these measures corroborated the results of the standardized tests.

As must be expected, the test scores of all students, both experimental and control, increased substantially across the school year. However, the gain of the experimental students was significantly greater than that of the control students on each of the tests. One way of indicating the magnitude of the effects is to express the gains realized by the experimental group as a percentage of the gains realized by the control group. In these terms, the gain of the experimental group was 21 percent greater than the gain of the control group on the CATTELL test, 46 percent greater on the OLSAT, 68 percent greater on the GATs, and 117 percent greater on the TATs.

Further, in terms of the raw percentage of correct answers, the gains of the experimental students were virtually constant across initial tests scores. This was very important to us since a major goal in designing the course was to reach not just the quickest and not just the slowest, but all students. Finally, analyses of the data revealed large differences in teacher effectiveness. This was to be expected since our teachers were not selected on the basis of teaching prowess. But the point is that even those students who took the course with the least effective teachers, significantly outgained their controls on the standardized tests. We take this as very positive feedback on our effort to make the curriculum materials universally usable.

Conclusions

I have had two goals in writing this paper. The first has been to argue that Chapter 1 students could genuinely profit from instruction on thinking and that, for maximum impact, such instruction should be introduced as a course in itself, separate from the regular curricula. I underscore "introduced" because, of course, the ultimate goal is to transport such thinking skills to all other curricular and extracurricular endeavors. My second goal has been to discuss some of the major issues and options one ought to consider before adopting a course on thinking skills for use with any given group of students.

The latter discussion was centered on six existing programs on thinking skills. In the interest of making the discussion concrete, I found something to criticize about each of these programs. I would like to clarify, however, that I chose these six programs for discussion because each has been used relatively extensively, with enthusiasm from students and teachers, and with its own brand of success.

Depending on a classroom's particular needs and constraints, any one of them might be a very good candidate for implementation. For a relatively quick program that serves to build confidence or to "open the door" to thinking, CoRT is a good choice. Given relatively homogeneous groups of students and a special interest in enhancing language arts and mathematics understanding, Think and Intuitive Math are good choices. I am less enthusiastic about Instrumental Enrichment because I think, relative to its typical returns, it requires an awful lot of teacher training and classroom time; on the other hand, if the students are markedly below norm, it may well be the best option. Finally, for Chapter 1 students whose performance is close to grade level or above, both Philosophy for Children and Productive Thinking are worth considering. The first of these offers the side benefit of improving reading comprehension scores; the second seems especially effective in increasing intellectual independence.

Beyond these six programs, there are and will be many others from which to choose. I believe the field is expanding not just in number of programs but in sophistication as well. The Odyssey program, which is just now being published, was described as an example of the forthcoming efforts. Although it has not been formally evaluated in the United States, the results of the Venezuelan experiment are very positive. As for the others, please note: just because I could not obtain adequate information about them for present purposes, does not mean there is none or won't be more.

As these programs proliferate, I hope that the present paper will help to define some of the factors governing their appropriateness and potential effectiveness for any given group of students. I hope, moreover, that it will supply some of the motivation and justification for giving the programs serious consideration. For Chapter 1 students especially, the direct teaching of thinking promises to be the best institutionalizable means of developing the competencies and attitudes they need to make the most of their schooling and their lives.

Endnotes

1. Innovative Sciences, Inc., provided me with evaluation reports from the following public schools: Detroit Public Schools/ Region Eight, Detroit, Michigan; Memphis City Schools, Memphis, Tennessee; Morris Central School, Morris, New York; Natchitoches Central High School, Natchitoches, Louisiana; Franklin Pierce School District, Tacoma, Washington; and Taos Junior High School, Taos, New Mexico.

2. Preparation of this report was funded in part by Contract No. NIE-400-81-0030 from the National Institute of Education to the Center for the Study of Reading at the University of Illinois and Bolt Beranek and Newman Inc. I thank Patrice Lyons for her help in preparing the manuscript.

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RESEARCH LINKING TEACHER BEHAVIOR TO STUDENT ACHIEVEMENT: POTENTIAL IMPLICATIONS FOR INSTRUCTION OF CHAPTER 1 STUDENTS

by

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RESEARCH LINKING TEACHER BEHAVIOR TO STUDENT ACHIEVEMENT: POTENTIAL IMPLICATIONS FOR INSTRUCTION OF CHAPTER 1 STUDENTS

This paper reviews research on school effects and teacher effects on student achievement. Most of this research was conducted in regular classroom settings rather than in special classes set up to deliver compensatory instruction to Chapter 1 students, but it is believed to be relevant input informing policy decisions about compensatory education, for four reasons. First, reviewers of research on compensatory and special education (Leinhardt & Pallay, 1982; Madden & Slavin, 1983) have concluded that the settings in which compensatory education take place are not nearly as important determinants of outcomes as the amount and nature of the instruction that occurs within those settings. Second, with the exception of a modest literature on specific learning disabilities, research has turned up very little evidence suggesting the need for qualitatively different forms of instruction for students who differ in aptitude, achievement level, socioeconomic status, ethnicity, or learning style. Main effects tend to be much more frequent and powerful than interactions, and the interactions that do occur tend to be ordinal interactions indicating that some students need more (of the same kind of) instruction rather than disordinal interactions indicating that some students need to be taught one way but other students need to be taught a different way (Brophy & Good, 1986; Cronbach & Snow, 1977; Doyle & Rutherford, 1984; Good & Stipek, 1983). Therefore, most findings concerning effective instruction of heterogeneous groups of students in regular classrooms will also apply to instruction of the same content to homogeneous groups of Chapter 1 students, whether in regular classrooms or in special settings. Third, much of the process-outcome research linking teacher behavior to student achievement focused on instruction in basic skills in the elementary grades in Title I or Chapter 1 schools, even if it did not occur in resource rooms or other special compensatory educational settings. Fourth, some such research did take place in resource rooms and other special compensatory educational settings, and for the most part, the findings from these studies suggest the same patterns of relationship between teacher behavior and student achievement as do the findings from studies conducted in regular classroom settings (the few exceptions will be noted later in the present paper). Unless otherwise stated, then, the research findings and suggested policy implications reviewed here are believed to apply to the compensatory education of Chapter 1 students in either regular or special classroom settings.

To provide focus for the review, and to avoid unnecessary overlap with other reviews prepared for presentation at the conference, the scope of the present paper has been circumscribed in several respects. First, the review concentrates on the literature on instruction (how to teach) but not on the literature on curriculum (what to teach). Second, it concentrates on empirical research in classroom settings but not on theoretical models of the learning process or on instructional design research conducted in laboratory settings. Finally, it concentrates on research designed to develop knowledge about relatively general principles of classroom teaching rather than principles unique to instruction in particular subject matter areas. In considering potential policy implications of the research findings, heavy emphasis has been placed on realism and practicality. That is, rather than considering what might be accomplished under more ideal circumstances, the emphasis is on what probably can be accomplished with the resources and within the constraints that apply in typical public school settings.

This emphasis on classroom teaching compliments the emphasis on curriculum goals and content typically found in reviews by discipline-based writers (see Calfee & Drum, 1986 on reading instruction and Romberg & Carpenter, 1986 on mathematics instruction). It takes as its point of departure the fact that teachers are charged with instructing classes rather than tutoring individuals. Consequently: (1) teachers must rely on methods that allow them to manage the students' behavior in addition to their learning; (2) they must either teach the whole class as a group or find ways to keep the rest of the class profitably occupied while working with small groups or individuals; (3) whatever the curriculum as intended by policy makers or materials designers, the curriculum as enacted in the classroom will be determined not only by the materials but by the explanations, demonstrations, and practice and application opportunities provided by the teacher; (4) the methods, materials, and activities that the teacher chooses to include in the total instructional program will be included at least in part because they are seen as compatible with one another and with successful classroom management; and (5) the total instructional program will be a compromise constructed in the belief that it will allow the teacher to meet more of the needs of more of the students than any of the feasible alternatives--it will not be an ideal program that continually meets each individual student's needs. The need to accept compromises by trading off classroom management benefits against costs in instructional quality and efficiency increases in relationship to the size and heterogeneity of the class. Large, heterogeneous classes require more regimentation to achieve a given level of management efficiency than smaller, more homogeneous classes do, and although it is possible for teachers to elicit comparable achievement gains from the former classes, doing so will require them to sustain extraordinary efforts and to minimize personal and social interactions with students, assignments that are desirable but time consuming to set up or correct, and other "extras" that improve quality of life in classrooms for both teachers and students (Evertson, Sanford, & Emmer, 1981).

The compromise represented by traditional whole-class instruction/recitation/seatwork methods is the one that the majority of teachers have selected as their basic approach to classroom instruction. Consequently, most process-outcome research is based on natural variation within this traditional approach. Consequently, much of our review will refer to research conducted in traditionally taught classes, although research on innovations such as individualized or adaptive education will also be discussed. We begin with process-outcome research on school effects.

Research on School Effects

Research that uses the school as the unit of analysis and seeks to establish linkages between school processes and student outcomes (especially achievement gain) is typically described as research on school effectiveness (if it involves "natural experiments" in which schools that attain impressive results are compared with schools that attain less impressive results from comparable student populations) or research on school improvement (in which guidelines developed from the "school effectiveness" research form the basis for inservice education programs whose effects on school processes or outcomes are then assessed). Such research is here described as research on school effects (rather than school effectiveness or school improvement) because a school's effectiveness in eliciting student achievement gain cannot be equated with the school's quality. School quality is a broader concept that usually would be defined to include not only achievement outcomes but affective outcomes such as promoting students' individual confidence and motivation as learners and their collective development of prosocial attitudes and cooperative behavior. The research reviewed here was focused on schools' effects on student achievement as measured by standardized achievement tests. This is valuable information that informs policy decisions, but it does not translate in any direct or automatic way into prescriptions for educational practice. In order to make such prescriptions, educational decision-makers must first identify and prioritize the educational outcomes that they value and then consider process-outcome information on the full range of outcomes to be pursued.

Although based on the same logic as teacher effects research (measure educational processes and outcomes, and then relate these two sets of measures), school effects research has been of generally lower quality. Process measures were usually confined to interviews and high inference ratings, and if classroom observation was done at all, it was usually done for brief times in only a subset of the classrooms in each school. Also, the student populations attending contrasting schools were not always as well matched as the investigators would have preferred, and the measured effectiveness levels of schools have proven to be relatively unstable. Nevertheless, some school effects studies have been well designed (Brookover, Beady, Flood, Schweitzer, & Weisenbaker 1979; Rutter, Maugham, Mortimore, Ouston, & Smith, 1979; Teddlie, Stringfield, & Desselle, 1985), and in any case, reviews of this body of literature as a whole indicate broad agreement on a common set of findings (Borger, Lo, Oh, & Walberg, 1985; Good & Brophy, 1986; Purkey & Smith, 1983).

Compared to schools that elicit weaker achievement gains from comparable students, schools that elicit strong achievement gains tend to be higher on the following characteristics: (1) strong leadership (typically supplied by the principal) that produces consensus on goal priorities and commitment to instructional excellence; (2) a safe, orderly school climate that supports the role of the school as an environment for learning; (3) positive teacher attitudes toward students and positive expectations regarding the students' abilities to master the curriculum; (4) an emphasis on instruction, especially instruction in basic skills, in allocating classroom time and assigning tasks to students; (5) careful and frequent monitoring of progress toward goals through student testing and staff evaluation programs; (6) strong parent involvement programs designed to keep parents informed of the school's goals and policies and to enlist their assistance and participation; (7) consistent emphasis on the importance of academic achievement, including praise and public recognition (prominent display of the names of honor roll students, etc.) for students who excel academically.

In short, schools that foster progress in academic achievement tend to be schools that place a high priority on doing so and follow up by adopting high but realistic expectations, coordinated instructional efforts, and periodic assessments of progress. The school is established as an orderly, learning-oriented environment, and the teaching staff is encouraged to capitalize on this by maximizing the achievement gains of the students in their classes. Research on school effects is relatively silent about how teachers can accomplish this (except for emphasizing high expectations, allocation of classroom time to academic activities, praise and reward of academic progress, and cooperation with the families), but research on teacher effects provides a good deal of relevant information.

Research on Teacher Effects

"Teacher effects" research refers to process-outcome research linking teacher behavior to student achievement. Like school effects research, it does not automatically translate into prescriptions for practice, but it provides useful information to inform the decisions of policy makers. The findings summarized here come from research conducted in typical elementary and secondary school settings, in which teachers were observed instructing their students under normal conditions. Product measures focused on achievement gain (controlled for entry level), and process measures were developed via reliable application of low inference coding systems by trained observers. Data were aggregated to focus on the teacher (or class) as the unit of analysis, and analyzed to identify the nature and strength of relationships between frequency or percentage measures of particular teacher behaviors and class means on adjusted achievement scores. Typically, the teacher behavior measures were summed or averaged across 4 to 20 observations spaced across time periods ranging from a few weeks to an entire term or school year, and achievement was measured with standardized tests administered at the end of the school year. Thus, these studies sought to link relatively general measures of teacher behavior with relatively general measures of student achievement. For more detailed review and discussion, see Brophy and Good (1986), Doyle (1986), and Rosenshine and Stevens (1986).

In the last 15 years or so, process-outcome research linking teacher behavior to student achievement has made enormous strides. What was once a very limited collection of scattered results that did not hang together to form easily interpretable patterns has become an increasingly integrated knowledge base that includes a sizeable collection of replicated correlational findings, many of which have been validated experimentally. The highlights of these findings are reviewed below. They are subdivided into quantitative findings that identify general classroom characteristics associated with high levels of student achievement gain and qualitative findings that suggest particular managerial and instructional behaviors involved in bringing about these achievement gains.

Quantitative Findings

The most basic and consistently replicated findings link students' achievement gains to their opportunity to learn the material, and in particular to the degree to which their teachers carry the content to them personally through active instruction and direct supervision of their learning efforts.

Opportunity to learn/content covered. Amount learned is related to opportunity to learn, whether measured in terms of curriculum pages covered (Good, Grouws, & Beckerman, 1978; Borg, 1979) or percentage of test items that were taught through lecture or recitation activities in class (Arehart, 1979; Cooley & Leinhardt, 1980; Dunkin & Doenau, 1980; Nuthall & Church, 1973; Smith, 1979). In short, more content coverage means greater opportunity to learn (assuming that the time devoted to the topic and the quality of the instruction are sufficient to insure that the students will master the content if they put forth reasonable effort). Opportunity to learn is bounded by the length of the school day and the school year, which determine the total amount of time available for instruction. However, available time is only indirectly related to content coverage and ultimately to student achievement; how the available time is used determines student opportunity to learn more directly (Karweit, 1985; Levin, 1984). In particular, the four variables discussed below determine student opportunity to learn in typical classrooms.

Role definition/expectations/time allocation. Achievement is maximized when teachers emphasize academic instruction as a major part of their role, expect their students to master the curriculum, and allocate most of the available time to curriculum related activities (Brophy & Evertson, 1976; Fisher et al., 1980; Stallings, 1975). Such teachers are seen as businesslike and task-oriented, and they allocate most of their available classroom time to activities with academic objectives rather than to activities with other types of objectives (personal adjustment, group dynamics) or to activities with no clear objective at all ("free time," student choice of games or pastimes). These teachers assume personal responsibility for seeing that their students master the curriculum. If the students don't learn something the first time they reteach them in a more thorough or different way, and if the assigned curriculum materials or evaluation devices do not seem to be appropriate for the students, they obtain or develop better ones.

Classroom management/student engaged time. Not all time allocated to academic activities is actually spent engaged in those activities. Student engagement rates depend on the teacher's ability to organize and manage the classroom as an efficient learning environment where academic activities run smoothly, transitions are brief and orderly, and little time is spent getting organized or dealing with inattention or resistance. High task engagement rates attained through such successful classroom management methods are among the most frequent and powerful correlates of student achievement (Brophy & Evertson, 1976; Coker, Medley, & Soar, 1980; Fisher et al., 1980; Good & Grouws, 1977; Soar & Soar, 1979; Stallings, 1975; Stallings, Cory, Fairweather, & Needels, 1977, 1978).

A great deal has been learned in the last 15 years about effective classroom management as defined in the previous paragraph. Pioneering work by Kounin (1970) followed up later by Brophy and Evertson (1976), Good and Grouws (1977), and especially Evertson, Emmer, and their colleagues (Emmer, Evertson, & Anderson, 1980; Evertson & Emmer, 1982; Evertson, Emmer, Sanford, & Clements, 1983) has shown that effective classroom managers succeed not so much because they know how to respond to problems of inattention and disruption when these occur, but because they are adept at preventing the occurrence of such problems in the first place. This work has led to the recognition that classroom management is best construed not as a process of compelling conformity from students who know what to do but refuse to do it, but instead as a process of being clear and consistent in teaching students desired classroom rules and procedures. Furthermore, this work has shown that good classroom management (in the sense of control over student behavior) and good instruction in the formal curriculum are intimately linked and mutually supportive. Teachers must not merely obtain but maintain student engagement in academic activities, and this means that the activities themselves must be appropriate for the students and that the teachers must be effective in implementing them.

Effective classroom managers are clear about their expectations. At the beginning of the year, they take time to instruct their students and provide any necessary practice in following classroom rules and procedures, and they follow up by reminding the students of these rules and procedures when they are supposed to be carried out and by intervening to provide corrective feedback or apply announced consequences if necessary. In general, their classrooms reveal: (1) good preparation of the physical environment and installation of routines and procedures concerning physical movement in the classroom, distribution of supplies, transitions between activities, and other housekeeping and "daily routine" matters; (2) continuous monitoring of events occurring at all points in the room (even when actively instructing a group or working with individuals); (3) smoothness and continued momentum in lesson pacing (accomplished partly through good preparation for instruction and partly through responding to inattention and potential disruption by using subtle intervention techniques that allow accomplishment of management goals without disrupting the flow of lessons); (4) variety and appropriate level of challenge in assignments; (5) clear accountability procedures and consistent follow-up concerning working on and completing assignments; and (6) clarity about when and how students can get help when they need it and about what options are available to them when they finish assigned work. For reviews of this research, see Brophy (1983) and Doyle (1986), and for suggestions about practical application, see Good and Brophy (1984).

Consistent success/academic learning time. To learn efficiently, students must be engaged in activities that are appropriate in difficulty level and otherwise suited to their current achievement levels and needs. It is important not only to maximize content coverage by pacing students briskly through the curriculum, but also to see that they make continuous progress all along the way, moving through small steps with high or at least moderate rates of success and minimal confusion or frustration (Brophy & Evertson, 1976; Fisher et al., 1980). In practice, this means that the students would be able to answer most (perhaps three-fourths) of the teacher's questions during group lessons in which the teacher is available to provide guidance and immediate corrective feedback, and would be able to sustain even higher (90-100 percent) success rates when they must work independently for extended periods without teacher supervision. More will be said about these high success rates in subsequent sections of the paper. For now, however, it should be noted that the high success rates described here are construed to result from effort and thought, not mere "automatic" application of already overlearned algorithms. Thus, high rates of success do not necessarily imply success that is obtained quickly or easily.

To point up the importance of high rates of success, the authors of Phase III-B of the Beginning Teacher Evaluation Study (Fisher et al., 1980) coined the term academic learning time (ALT), which they defined as the time that students spend engaged in academic tasks that they can perform with high rates of success. ALT consistently showed significant positive correlations with achievement in their study, although achievement was associated with moderate rather than high rates of success under some circumstances.

Active teaching. Students achieve more in classes where they spend most of their time being taught or supervised by their teachers rather than working on their own or not working at all (Arehart, 1979; Brophy & Evertson, 1976; Good & Grouws, 1977; Stallings, 1975; Stallings et al., 1977, 1978). Active teaching connotes frequent lessons (whole class or small group, depending on grade level and subject matter) in which the teacher presents information and develops concepts through lecture and demonstration, elaborates this information in the feedback given following responses to recitation or discussion questions, prepares the students for follow-up assignments by giving instructions and going through practice examples, monitors progress on assignments after releasing the students to work independently, and follows up with appropriate feedback and reteaching when necessary. The teacher carries the content to the students personally rather than depending on curriculum materials alone to do so, but conveys information mostly in brief presentations followed by recitation or application opportunities. There is a great deal of teacher talk, but most of it is academic rather than procedural or managerial, and much of it involves asking questions and giving feedback rather than extended lecturing.

Comments on quantitative findings. The school effects findings reviewed in the previous section and the quantitative teacher effects findings reviewed in the present section complement each other in demonstrating that achievement gain is associated with a complex of factors including placing high priority on achievement gain as a goal and adopting congruent definitions of the teacher's role, adopting high but realistic expectations about the students' ability to master the curriculum and the teacher's ability to teach it to them, and allocating most available time to academic activities so as to maximize content coverage and student opportunity to learn. By implication, these findings identify two types of teachers who will be relatively unsuccessful in eliciting achievement gain from their students: teachers who are burned out or who for whatever reason are not committed to any clear-cut educational goals (who devote a great deal of classroom time to busywork or noneducational pastimes), and teachers who place a high priority on affective or social outcomes but a low priority on achievement outcomes (so that less of the available time is spent instructing students in the formal curriculum). Some of the latter teachers may be effective in realizing the goals they choose to emphasize, although the little research that is available on teachers with contrasting goal priorities (Prawat, 1985) suggests that teachers who emphasize affective and social outcomes in addition to achievement outcomes tend to get better results than teachers who emphasize affective and social outcomes instead of achievement outcomes.

The findings concerning classroom management effectiveness and student engaged time identify a third class of teachers who will be relatively unsuccessful in eliciting student achievement gains: Teachers who may be committed to achievement outcomes but unable to attain them for lack of classroom management skills. Such teachers would benefit from research-based classroom management retraining programs, which have proven effective in assisting teachers to increase student engagement rates and ultimately student achievement levels (Evertson, 1985).

The findings on active instruction identify a fourth class of teachers likely to be relatively unsuccessful in eliciting student achievement gains: Teachers who rely on individualized learning modules and other materials-based approaches to individualized instruction to carry the content to the students rather than doing so themselves through active whole-class or small-group instruction. Materials-based approaches have worked under some circumstances, but they typically do not work well in ordinary classrooms where one teacher must work with 20 to 40 students. The problem is not with the abstract principle of individualized instruction that calls for beginning where students are and moving them along at their own pace. Instead, the problem is that in practice, individualized instruction in the typical classroom shifts a great deal of responsibility for planning and managing learning from the teacher to the students themselves and shifts responsibility for carrying the content to the students from the teacher to the materials. This is workable and may even have certain advantages when the teacher is continually available to provide close supervision and immediate help when needed, but it does not work well when students must work on their own for extended periods of time, trying to learn through interacting with the curriculum materials without much guidance or help from the teacher. This method of learning demands a combination of functional literacy, direction following skills, independent learning skills and habits, and sustained concentration and motivation that is almost nonexistent in the primary grades and likely to be seen in only a minority of students in the intermediate and secondary grades. These findings imply that "teacher proof curricula" and related approaches that attempt to carry the content to students through curriculum materials (or computer programs, for that matter) not only have not worked but cannot work under the constraints imposed by the typical classroom. Unless they are prepared to change the basic nature of schooling, would-be school innovators will need to work through, not around, teachers.

The individualized learning package approach can be used effectively, however, in special classrooms with small student-teacher ratios. Crawford (1983) studied instruction in special compensatory education classes for Title I students. These classes were small (5 to 10 students), intended to remediate weaknesses in basic reading and mathematics skills, and taught by specially trained teachers assisted by paraprofessional aides. Most of the process-outcome correlations obtained in this study replicated findings from regular classrooms, but there were two interesting exceptions: Instead of the usual negative relationships, positive relationships with achievement were observed for teacher time spent in one-to-one individualized instruction and for student time spent working on relatively challenging rather than relatively easy assignments. These findings indicate that in special classes with small student-teacher ratios, teachers can move the students through curricula at a faster pace, can provide more tutorial and individualized instruction, and can assign more difficult work because they are able to continually monitor everyone's progress and provide immediate help when needed.

The research reviewed so far underscores the role of active instruction from the teacher in producing student achievement gain. Such instruction can be provided in tutorial form in special classes with small student-teacher ratios, and it can be provided to small groups in classrooms where the teacher has developed appropriate assignments and installed effective seatwork management procedures so that students are engaged in worthwhile academic activities in between their small-group lessons from the teacher. The individualized approach is not feasible in the typical classroom, however, and even the small-group approach is likely to strike most teachers as more trouble than it is worth unless they have an aide available to supervise seatwork while they teach small-group lessons (or unless they believe that the class is so heterogeneous that they are forced to provide differentiated instruction to small homogeneous groups). Consequently, most teachers will opt for the traditional whole-class instruction/recitation/seatwork method as their primary approach to instruction. Process-outcome research on teaching has identified certain qualitative elements of this approach that are associated with student achievement gain.

Qualitative findings

The qualitative findings concern teachers' management of lessons when instructing the whole class or a subgroup of students and their management of work on assignments during seatwork times. The findings concerning management of lessons can be subdivided according to the three major instructional tasks involved in typical classroom lessons: giving information (structuring), asking questions (soliciting), and providing feedback (reacting).

Giving information (structuring)

There is now a good deal of both correlational and experimental data on presentation of information to students. These data hang together well to form a consistent pattern and provide strong support for the ideas of Ausubel, Bruner, and other "cognitive structuralists" who stress the importance of structuring the content so that students can learn it as an organized body of knowledge rather than trying to memorize what they can of what seems to be a random list of isolated facts. Research on oral presentations in classrooms has yielded stronger and more consistent relationships with student achievement than earlier research involving presentation of written text to college students.

Structuring. Achievement is maximized when teachers not only actively present material to their students but structure it by: beginning with overviews, advance organizers, or review of objectives; outlining the content and signaling transitions between lesson parts; calling attention to main ideas; summarizing subparts of the lesson as it proceeds; and reviewing main ideas at the end (Alexander, Frankiewicz, & Williams, 1979; Armento, 1977; Dunkin, 1978; Fortune, 1967; Schuck, 1981, 1985; Wright & Nuthall, 1970). Apparently, organizing concepts and analogies help students link new content to already familiar ideas, overviews and outlines help them to develop learning sets to use in assimilating the content as it unfolds, rule-example-rule patterns and internal summaries tie specific information items to integrative concepts, and summary reviews integrate and reinforce the learning of major points. Together, these structuring elements not only facilitate memory for the information but allow for its retention as an integrated whole with recognition of the relationships between parts.

Redundancy/sequencing. Achievement is higher when the content is sequenced in a logical way and presented with sufficient redundancy to make it easy for students to follow the presentation and see the linkages from one sentence to the next as it unfolds (Armento, 1977; Nuthall & Church, 1973; Smith, 1985; Smith & Sanders, 1981).

Clarity. Students achieve more when their teachers make clear presentations marked by continuity and precision of language rather than interruptions due to false starts or meandering into side issues, hemming and hawing, or vague terminology. Most of the presently available information is on factors that detract from clarity (see reviews by Rosenshine, 1968 and by Smith & Land, 1981), although recent work has begun to develop methods of conceptualizing and measuring positive aspects of clarity such as sufficiency of definitions, accuracy of examples, and explicitness of explanations (Book & McCaleb, 1984; Hines, Cruickshank, & Kennedy, 1985; McCaleb & White, 1980). In general, clarity of presentation is one of the more consistent correlates of achievement, especially in situations involving learning of new or difficult material.

Enthusiasm. Teacher enthusiasm when presenting material relates more centrally to student attitudes than to achievement, but when it does correlate significantly with achievement gain it tends to correlate positively (Armento, 1977; Bettencourt, Gillett, Gall, & Hull, 1983; Hughes, 1973).

Questioning the students (soliciting)

The findings reviewed in this section concern the teacher's management of public response opportunities that occur during recitations and discussions.

Difficulty level of questions. Studies of the difficulty level of questions (the likelihood that a question will be answered correctly by the first respondent) have produced mixed results. It seems clear that most (perhaps 75 percent) of teachers' questions should elicit correct answers, and that most of the rest should elicit overt, substantive responses (incorrect or incomplete answers) rather than failures to respond at all (Anderson, Evertson, & Brophy, 1979; Brophy & Evertson, 1976; Wright & Nuthall, 1970). Even these guidelines are of limited usefulness, however, because they are generalized across instructional contexts, and optimal question difficulty probably varies with context. For example, basic skills instruction requires a great deal of drill and practice, which means frequent, fast-paced drill/review lessons during which most questions should be answered rapidly and correctly. However, when teaching complex cognitive content, or when trying to stimulate their students to generalize from, evaluate, or apply what they are learning, teachers will need to raise questions that few students can answer correctly (as well as questions that have no single correct answer at all). Similarly, relatively frequent errors may be expected early in the unit when new learning is occurring, but few errors should occur later in the unit when mastery levels are supposed to have been achieved.

The quality of errors should also be taken into account. Some errors occur because students have the right general idea but make a minor miscalculation, or because they use sound logic but base it on assumptions that are plausible but happen to be faulty. Such "high quality" errors are understandable and may even provide helpful guidance to the teacher. However, errors that suggest inattention, hopeless confusion, or alienation from the material are undesirable.

Cognitive level of questions. Data on the cognitive level of questions (as distinct from their difficulty level) have also produced mixed results, so that reviewers (Redfield & Rouseau, 1981; Winne, 1979) have drawn conflicting conclusions. It is clear that the data refute the simplistic (but frequently assumed) notion that higher-level (application, analysis, synthesis, evaluation) questions are categorically better than lower-level (knowledge, comprehension) questions. Several studies indicate that lower-level questions facilitate learning, even learning of higher-level objectives (see Brophy & Good, 1986, for a review). Furthermore, even when the frequency of higher-level questions correlates positively with achievement, the absolute numbers on which these correlations are based typically show that only about 25 percent of the questions asked were classified as higher-level. Thus, even in situations (involving teaching to higher-level objectives) that call for teachers to ask "more" or "frequent" higher-level questions, we should not expect that all or even a majority of their questions will be higher-level questions. Lower-level questions are valuable too, both in their own right and as ways to set the stage for or to follow up on higher-level questions.

Post-question wait-time. Studies of secondary level science instruction have shown higher achievement when teachers pause for 3 to 5 seconds (rather than for one second or less) after asking a question, in order to give the students time to process the question and formulate an answer before calling on one of them to respond (Tobin, 1980; Tobin & Capie, 1982). Research in other contexts also generally supports the value of longer wait-times, although more clearly for the upper grades than for the lower grades (Tobin, 1983). It appears that the length of pause following a question should vary directly with the difficulty level and especially the complexity or cognitive level of the question. A question calling for application of abstract principles should require a longer pause than a factual question.

Selection of respondents. Findings on selection of respondents to questions tend to vary with context. In the early grades, and especially in small-group lessons, it is important for each student to respond overtly and frequently to teacher questions. In small-group reading lessons, this can be accomplished by allowing each student to take a turn in order, training the students not to call out answers or words, and calling on nonvolunteers as well as volunteers (Anderson, Evertson, & Brophy, 1979). Here, it is important to prevent assertive students from coopting other students' response opportunities, and to insure that reticent students participate regularly even though they may seldom volunteer.

However, in whole-class settings and increasingly with grade level, it becomes less feasible to have all students participate overtly, let alone to insure that all participate roughly equally. Fortunately, frequency of overt participation in lessons does not appear to correlate with achievement in the upper grades (Hughes, 1973). In the upper grades, maintaining continuity and keeping the lesson moving along at a brisk pace seems to be more important than insuring the overt participation of each individual student. This is partly because the switch from emphasis on basic skills in the early grades to emphasis on conceptual knowledge in the later grades reduces students' needs for overt practice, and partly because older students have more highly developed skills for learning through watching and listening than younger students do.

Frequency of academic questions. The sheer frequency of academic questions asked by teachers typically correlates with student achievement gain. Presumably this is because recitation is of value in its own right (Gall et al., 1978) and because teachers who who conduct recitation lessons more often tend to do more active teaching generally.

Reacting to student responses

Findings on teacher reactions to student responses are weaker, less consistently replicated, and less supported by experimental data than the findings reviewed above, except for the basic finding that feedback reactions are important (teachers who provide regular and extensive feedback elicit higher achievement gain than teachers who typically give minimal feedback or frequently fail to give any feedback at all).

Reactions to correct responses. It appears to be important that correct responses be acknowledged as correct (because even if the respondent knows that the answer is correct, some of the onlookers may not). However, it does not appear important (to achievement gain, at least) that such positive feedback go beyond mere affirmation of the correctness of the response to the point of praising the student (delivering social reward, rather than mere affirmation). The frequency of teacher praise of correct responses usually correlates positively with achievement, but these correlations are usually quite low and sometimes are negative (Brophy & Evertson, 1976; Stallings, 1975).

Perhaps this should not be surprising, because public praise of students who supply correct answers is often intrusive and distracting, and it may embarrass the recipient, especially if the accomplishment was not especially praiseworthy in the first place. In any case, teachers who maximize achievement gains are sparing rather than effusive in praising correct answers. Review of tne literature on teacher praise (Brophy, 1981) suggests that it is more likely to be effective when it is specific rather than global, when it is used with dependent or anxious students rather than assertive or confident students, when it is delivered privately rather than publicly, and when it is delivered in ways that focus attention on the content or accomplishment rather than on the teacher or the recipient of the praise.

Correlations of praise rates with achievement gain are especially likely to be positive (although still weak) in studies of schools serving students from low socioeconomic status families or teachers instructing low-achieving students. Therefore, teachers supplying compensatory education to Chapter 1 students probably should praise these students more often than other teachers praise their students (perhaps 10 to 20 percent of their students' correct answers might be praised). Beyond some optimal level, however, public praise of correct answers to teachers' questions becomes intrusive and counterproductive. Furthermore, it appears to be more important that teachers create a supportive learning environment and be patient and encouraging throughout their interactions with their students than that they praise a high percentage of the correct answers that these students supply during classroom recitations.

Reactions to incorrect responses. In responding to students' incomplete or incorrect answers, it appears that teachers should typically acknowledge whatever part may be correct and then, if there are good prospects for success, should try to elicit an improved response. Several studies have suggested that teachers who elicit strong achievement gains are relatively more likely to sustain interaction with the original respondent by repeating or simplifying the question or by giving clues than to terminate the interaction by giving the answer or calling on another student to supply it (Anderson, Evertson, & Brophy, 1979; Clark et al., 1979; Crawford, 1983). Whether or not the teacher should seek to elicit an improved response will depend on several situational factors. Doing so takes time and slows lesson pacing, for example, so that it is not advisable when time is running out or when the loss of lesson momentum might lead to significant inattention or disruption problems. Also, certain students are prone to become extremely anxious or embarrassed when "put on the spot" in this way, so it is sometimes better to terminate interactions with them rather than continue to question them. Finally, although certain questions (especially complex, higher-level questions) lend themselves well to simplification through rephrasing or division into smaller parts, other questions (especially those calling for knowledge of specific facts) do not, so that continued attempts to elicit improved responses to the latter questions may amount to "pointless pumping" of the student (Brophy & Evertson, 1976; Good, Ebmeier, & Beckerman, 1978).

Reacting to failure to respond. Seeking to elicit an improved response is especially important when students make no response at all to the original question (as opposed to responding overtly but incorrectly). Teachers who allow such failures to respond elicit less achievement from their students than teachers who train their students to respond overtly to questions, even if only to say "I don't know" (Brophy & Evertson, 1976; Evertson, Anderson, Anderson, & Brophy, 1980; Wright & Nuthall, 1970).

Reacting to student questions and comments. Teachers who elicit higher achievement gains tend to discourage irrelevant student questions and comments, but to respond positively to relevant questions and comments by answering them, redirecting them to the class, or incorporating them into the flow of the lesson (Evertson et al., 1980; Flanders, 1970). Such use of student ideas appears to become more important with each succeeding grade level, as students become both more able to contribute useful ideas and more sensitive to whether teachers treat their ideas with interest and respect.

Managing assignments

Although independent seatwork is probably overused and is not a substitute for active instruction by the teacher or for drill/recitation/discussion opportunities, seatwork (and homework) assignments provide needed practice and application opportunities. Ideally, such assignments will be varied and interesting enough to motivate student engagement, new or challenging enough to constitute meaningful learning experiences rather than pointless busywork, and yet easy enough to allow students to attain high levels of success if they put forth reasonable effort (Brophy & Evertson, 1976; Fisher et al., 1980; Kounin, 1970). Success rates will have to be very high (near 100 percent) for assignments on which students are expected to work on their own. Lower (although still generally high) success rates can be tolerated when students who need help can get it quickly. Once again, it should be noted that these success rates are assumed to result from sustained student effort and thought, not mere automatic application of familiar algorithms.

It should also be noted that student success rates are determined not only by the difficulty level of the work itself but by the degree of thoroughness with which the teacher prepares the students for the assignment before releasing them to work on it independently. Teachers who elicit higher achievement gains from their students tend to explain assignments thoroughly and go over several practice examples before releasing the students to work independently, and to circulate in order to monitor performance and be available to provide immediate help to those who need it during seatwork times.

Such teachers also install effective seatwork management systems. Their students know what work they are accountable for, how to get help when they need it, and what to do when they finish. Performance is monitored for completion and accuracy, and the students receive timely and specific feedback. Poor performance produces not only feedback but reteaching, and follow-up assignments designed to insure that the material is mastered.

Good seatwork management is especially important when teachers are instructing small groups and thus do not wish to be interrupted by students working on seatwork assignments. Anderson, Brubaker, Alleman-Brooks, and Duffy (1985) suggest that after making seatwork assignments, teachers should spend several minutes circulating among students to make sure that all of them get started successfully before beginning small-group instruction. Similarly, they should take a few minutes during the transition between groups to circulate and assess progress. If a common source of confusion is detectable, the teachers may wish to provide a mini-explanation to the class as a whole at such times; otherwise they would just monitor and provide feedback to individuals. During small-group instruction times, teachers can eliminate the need for students working on assignments to wait for long periods of time when they become confused by appointing certain students to act as resource persons and helpers, establishing a buddy system or other approaches to cooperative learning, or training students to come up to the teacher for help during small- group instruction but wait quietly until recognized.

Considering their importance and the time spent working on them, remarkably little research is available on the nature and management of assignments. Osborn (1984) has found that assignments are frequently either too easy or too difficult for most of the students, poorly coordinated with what is being taught during group lessons at the time, or designed in such a way as to be more likely to confuse or mislead than to teach the target concepts. She presents guidelines for judging seatwork and homework assignments that are very basic but worthy of attention because they appear to be violated so frequently (Examples: Assignments should provide practice or application opportunities related to the important objectives being taught in the unit; extra tasks should be available for students who need extra practice; tasks should contain enough content to insure that students learn the material rather than merely get exposed to it; brief explanations of purpose should be included; and response modes should feature actual reading and writing rather than circling, underlining, drawing arrows, etc.).

Teachers presumably could make up for many of these deficiencies by providing clear explanations, but the work of L. Anderson et al. (1985) suggests that they typically do not do so. These investigators showed that students often did not understand the purpose of seatwork assignments and tended to think about the assignments primarily in terms of finishing them rather than in terms of learning what they were supposed to be learning. Presumably this was because, when presenting the assignments in the first place, the teachers tended to concentrate on what to do and how to do it but seldom included statements about the objectives of the assignments or explicit explanations of the cognitive strategies to be used in responding to them. Even when circulating among the students to monitor progress, the teachers tended to concentrate on keeping the students busy and urging them to finish the work rather than to attend to the quality of their answers or to question them about their answers in order to determine whether they understood what they were doing and were acquiring the intended concepts and skills.

In general, much more information is needed about what kinds of classroom tasks and assignments are appropriate for accomplishing particular objectives with particular students. Somewhat more information is available on managing assignments than is available on the nature of the assignments themselves, but additional information is needed here, too (especially regarding methods of checking work, providing feedback, and arranging for any needed remedial instruction or practice while continuing to manage the classroom as a whole and to move forward through the curriculum).

Homework. Most studies on the topic suggest that homework provides a useful supplement to classroom instruction and increases student achievement (Good & Grouws, 1979; Keith, 1982; Rickards, 1982; Strother, 1984; Walberg, Paschal, & Weinstein, 1985). Beneficial results are especially likely if the homework is not merely assigned but is checked and produces feedback from the teacher. Very little information is available about how much or what kind of homework to assign. It seems likely that everything said above about seatwork would apply to homework, and in addition, that it would be especially important to make sure that the students understood and could handle homework assignments on their own, because the teacher would not be available to provide assistance.

The studies that support the value of homework typically involve relatively modest homework assignments (10 or 15 minutes per night rather than an hour or more). It seems intuitively obvious that the length and difficulty levels of homework assignments should be correlated with the ages and ability levels of the students, and that for a particular class of students there should be an optimal amount of homework that would produce better results than other amounts that would be either too much or too little. This is speculation, however; information is badly needed on how much and what kind of homework to assign to different types of students.

Cooperative learning methods. Cooperative learning methods provide an alternative to traditional independent seatwork as a method for managing students' work on assignments. Although sometimes discussed as if they were wholesale replacements for the traditional whole-class instruction/recitation/seatwork approach, most cooperative learning methods are actually a variation of this approach in which whole-class instruction and recitation take place as usual but some or all of the work on assignments is done by small groups of students working cooperatively rather than by individuals working alone. Cooperative learning methods are worthy of consideration because, unlike most other proposed innovations to traditional schooling methods, they are relatively cheap and easy to implement by individual teachers and testaments to their effectiveness are backed by a great deal of credible classroom research. The methods have been used with positive results on affective outcomes and neutral to positive results on achievement outcomes, mostly in grades 4 through 9 (see Slavin, 1983, for a comprehensive review).

The best known cooperative learning programs can be divided into two types, one that is more purely cooperative and another that combines cooperation within groups with competition between groups. The more purely cooperative methods include Jigsaw (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978), Group Investigation (Sharan et al., 1984), and the various methods developed by David and Roger Johnson (Johnson, Johnson, Holubec, & Roy, 1984). These methods have been used primarily in social studies and in connection with assignments that call for work on higher-level cognitive objectives. In these methods, students work in four- or five-member groups to discuss or debate issues or to develop a group project such as a biography of a famous person, a research report, or a display or presentation to be made to the rest of the class. To make sure that everyone participates actively, each individual student is given certain unique information that the group will have to take into account in developing its final product, or else the task is divided into differentiated subtasks that allow each individual to contribute in an active and unique way. In general, these cooperative learning methods work best when tasks are structured to create: (1) positive interdependence (group members recognize that they are interdependent on one another for achieving a successful outcome); (2) face-to-face interaction among the members; (3) individual accountability for mastering assigned material (it is not possible for the brighter or more assertive students to ignore other group members or cover for them if they fail to do what they are supposed to do); and (4) training of students in appropriate small-group interaction and cooperation skills (Johnson et al., 1984).

The Student Team Learning methods developed by Slavin (1983) and his colleagues involve dividing the class into four- or five-member teams. Members of the same team cooperate to help one another master material and prepare for competition against other teams. Members earn points for their teams according to their degree of success in answering questions on the content, with winning teams as well as outstanding individual performances receiving prizes or recognition for their success. Student Team Learning methods include Teams-Games-Tournament (TGT), Jigsaw II, Student Teams-Achievement Divisions (STAD), and Team-Assisted Individualization (TAI). Student Team Learning methods do not involve creation of a single group product like the more purely cooperative learning methods do. Instead, each individual student works on the same set of assignments or an individualized set of assignments and prepares for testing on the content he or she has been learning. However, the team competition and group reward system motivates team members to help one another by discussing the work, providing tutoring and encouragement, administering quizzes or drill exercises, and checking answers. Student team learning methods have been used mostly with assignments involving practice of basic skills, especially mathematics assignments.

Cooperative learning methods appear to be at least comparable to traditional independent seatwork methods in fostering student achievement gain. Student Team Learning methods, in fact, typically produce higher achievement than traditional independent seatwork methods, at least on mathematics computation tests (there usually is no significant difference on mathematics concepts tests). Furthermore, all of the cooperative learning methods foster progress toward affective and social outcomes. Because they bring heterogeneous groups of students together under cooperative learning conditions, these methods tend to lead to better attitudes and more cooperative interpersonal contacts between students who differ in achievement level, sex, race, ethnicity, and handicapping condition, so they are especially useful in schools where desegregation or mainstreaming issues are of particular concern.

Certain limitations on cooperative learning methods should be noted. First, these methods have been used most frequently in mathematics, social studies, and language arts classes in grades 4 through 9. They may be less relevant or more difficult to implement for teachers working with primary grade students or upper secondary grade students, or for any teachers instructing students in reading, writing, laboratory science, or foreign languages. Also, these methods require transfer of initiative and responsibility for managing work on assignments from the teacher to the students themselves, and this may create problems for teachers with marginal classroom management skills or for any teachers working in classrooms composed of homogeneously grouped low achievers (Slavin, 1983). In classes where all of the students are low achievers and many are frustrated or alienated learners, the students may not be able to profit as much from cooperative small-group activities or may need much more extensive training in how to stay on task and work cooperatively during these activities than students in other types of classrooms would need.

Interactions with Context and Learner Characteristics

Even the most widely replicated process-outcome relationships usually must be qualified by references to the context of instruction. Interactions with context typically involve relatively minor elaborations of main effects, although occasionally interactions are more powerful than main effects (Brophy & Evertson, 1976; Solomon & Kendall, 1979). Certain interaction effects appear repeatedly and constitute well established findings. Many of these involve grade level differences, subject matter differences, or differences associated with student socioeconomic status/ability/affect.

Grade Level

In the early grades, classroom management involves a great deal of instruction in desired routines and procedures. Less of this instruction is necessary in later grades, but there it becomes especially important to be clear about expectations and to follow up on accountability demands, especially those concerned with completing and turning in work on time. Lessons in the early grades involve basic skills instruction, often conducted in small groups and under conditions in which it is important that each student participate overtly and often. In later grades, lessons typically are with the whole class and involve applications of basic skills or consideration of more abstract content. Here, overt participation is less important than factors such as the degree to which the teacher structures the content, is clear and well organized in making statements and asking questions, and projects enthusiasm. Finally, the praise and symbolic rewards that are common in the early grades give way to the more impersonal and academically centered instruction common in the later grades, although it is important for teachers in the later grades to treat students' contributions with interest and respect.

These grade-level differences in the nature of teaching and learning in different classrooms must be taken into account in considering the potential implications of process-outcome research for classroom instruction. So must related considerations such as the particular objectives of an activity and its place within the larger unit of instruction. For example, information about structuring and sequencing the content is of most relevance to situations in which the teacher is presenting new content to the students (especially abstract or otherwise complex content), but it is less relevant to brief demonstrations of specific skills and not relevant at all to activities that do not involve presentation of content. Similarly, information about the values of wait-time following questions and about simplifying questions in an attempt to elicit improved responses is most relevant to discussions involving higher-level questions, less relevant to recitations involving lower-level questions, and not relevant at all to activities that do not involve asking the students questions. These considerations should be intuitively obvious to anyone, yet it is not hard to find teacher educators or program developers who suggest that a single lesson format is appropriate for all academic activities or local administrators or state officials attempting to use a single classroom observation instrument for assessing instruction at every grade level or in every kind of academic activity. Although such individuals sometimes cite selected process-outcome research in attempting to justify their actions, in fact, process-outcome research considered as an integrated body of information provides no support for such actions (see Brophy, in press and Brophy & Good, 1986 for more on these issues).

Subject Matter

In addition to the relatively general principles reviewed here, process-outcome research has suggested principles for teaching particular subject matter at particular grade levels. For example, Anderson, Evertson, and Brophy (1979, 1982) developed, tested, and revised a set of principles for organizing and instructing small groups of students in the primary grades, particularly reading groups. One principle that emerged from correlational work and was confirmed in a field experiment was that better achievement results were obtained when teachers proceeded in order around the group when allocating reading turns or asking questions (rather than skipping around randomly, as is recommended more typically). These authors speculated that the "ordered turns" method produced better results because: (1) it insures roughly equal participation by all group members (earlier research relating to teacher expectation effects had shown that teachers who think they are questioning students randomly and roughly equally tend to give more response opportunities to brighter and more assertive students); (2) it provides structure and predictability to small-group reading lessons that may be helpful to anxious or confused students; and (3) it minimizes handwaving and other vigorous attempts by the more assertive and extroverted students to get the teacher to call on them, thus increasing the degree to which all of the students attend to the content being taught rather than to issues of who gets to be called on by the teacher. For these reasons, the authors recommend the ordered turns method for small-group instruction in beginning reading, but they caution that the method would be overly constricting and otherwise unfeasible for use in whole-class settings and that many of its advantages would be negated even in small-group settings in higher grade levels where students are sophisticated enough to anticipate what they will be asked to do and concentrate on practicing that rather than paying attention to what goes on in the meantime (Kounin, 1970, noted the latter as a frequent problem and recommended that teachers deliberately be unpredictable in allocating response opportunities so as to hold students accountable for paying attention continuously).

Good and Grouws (1979) developed guidelines for fourth-grade whole-class mathematics instruction that called for beginning with eight minutes of review (going over the previous day's homework assignment and asking several mental computation exercises), then devoting about 20 minutes to development of concepts (review prerequisites, explain and demonstrate new concepts or skills, assess student comprehension through questioning and controlled practice, repeat and elaborate as necessary), then devoting about 15 minutes to supervised seatwork, and then finishing by assigning about 15 minutes of homework. These guidelines can be expected to apply to whole-class instruction in fourth-grade mathematics (for which they were developed in the first place), but they might well have to be adjusted for whole-class instruction in mathematics at other grade levels, and they simply do not apply (except perhaps accidentally) to instruction in other subject matter or to mathematics instruction in classrooms that use small-group or individualized rather than whole-class instructional methods.

These examples are given both to underscore the need for taking into account grade level, subject matter, and the nature and objectives of the activity in attempting to draw inferences about appropriate instruction from process-outcome research and to alert readers to the fact that a great deal of research on instruction in particular grade levels and subject matter areas exists in addition to the relatively generalizable studies reviewed here. For examples, see the Handbook of Reading Research (Pearson, Barr, Kamil, & Mosenthal, (1984) and the chapters dealing with particular subject matter areas in the Handbook of Research on Teaching (Wittrock, 1986). It seems likely that most of what is going to be discovered about relatively generalizable process-outcome relationships has already been discovered, and that the most important new contributions to the process-outcome literature in the future will come from studies of instruction in particular subject matter at particular grade levels that feature focused attention on the nature of the content or skills to be taught and on related subject matter-specific pedagogy.

Student Socioeconomic Status/Ability/Affect

Student socioeconomic status is taken here as a "proxy" for a complex of correlated cognitive and affective differences between subgroups of students. The cognitive differences involve IQ, ability, or achievement levels. Interactions between process-outcome findings and student socioeconomic status or achievement level indicate that low socioeconomic status or low-achieving students need more control and structuring from their teachers: more active instruction and feedback, more redundancy, and smaller steps with higher success rates. This will mean more review, drill, and practice, and thus more lower-level questions. Across the school year, it will mean exposure to less material, but with emphasis on mastery of the material that is taught and on moving the students through the curriculum as briskly as they are able to progress. To the extent that these students do progress and become more like high socioeconomic status or high-achieving students, they will then need relatively less structuring and more challenge.

Affective correlates of socioeconomic status include the degree to which students feel secure and confident vs. anxious or alienated in the classroom. High socioeconomic status students are likely to be confident, eager to participate, and responsive to challenge. They typically want respect and require feedback, but do not require a great deal of encouragement or praise. They tend to thrive in an atmosphere that is academically stimulating and somewhat demanding. In contrast, low socioeconomic status students are more likely to require warmth and support in addition to good instruction from their teachers, and to need more encouragement for their efforts and more praise for their successes. It appears to be especially important to teach them to respond overtly rather than to remain passive when asked a question, and to be accepting of their relevant call-outs and other academic initiations when they do occur. This combination of demandingness and supportiveness is part of what is involved in adopting positive but realistic expectations and a teacher role definition that includes assuming responsibility for making sure that the students learn (as described earlier in this paper).

Neither race nor ethnicity have been investigated systematically in process-outcome research, so that nothing is known about their influences on relationships between teacher behavior and student achievement. Other than indirect relationships mediated through socioeconomic status, however, the probability of discovering process-outcome patterns unique to particular racial or ethnic groups is very low. As noted, process-outcome research yields more powerful main effects than interactions, and the interactions that do appear tend to be ordinal rather than disordinal.

Research in Special Educational Settings

Most research on compensatory education in resource rooms or other special educational settings is relatively uninformative because it does not include extensive classroom observation. However, a few such studies have been reported, so they are given special mention here.

The Instructional Dimensions Study (Cooley & Leinhardt, 1980) focused on reading and mathematics instruction in the first-grade and third-grade compensatory education classrooms. This study revealed that achievement gain was associated with opportunity to learn as reflected in high amounts of time allocated to instruction, especially to instruction on the skills stressed in the tests. The degree to which such instruction was individualized was unrelated to achievement gain.

Sindelar, Smith, Harriman, Hale, and Wilson, (1984) observed reading instruction in elementary level classrooms for mildly retarded (EMR) students. They found that achievement gain was associated with the amount of classroom time devoted to teacher-directed instruction, and in particular with the frequency of teacher questioning (recitation).

Stallings et al. (1978) studied remedial reading instruction at the secondary level. Once again, quantity of instruction was the key correlate of achievement. Achievement gains were associated positively with time spent instructing small or large groups, reviewing or discussing assignments, having the students read aloud, praising their successes, and providing support and corrective feedback following their mistakes. Negative correlates included: teacher not interacting with the students; teacher getting organized rather than instructing; teacher offering students choice of activities; students working independently on silent reading or written assignments; time lost to outside intrusions or spent in social interaction; and frequency of disciplinary interactions. Within these general trends, the most successful teachers tended to use the methods that would be used in grade levels corresponding to these secondary students' existing reading levels. With students functioning at a primary reading level, small-group instruction that began with development of vocabulary and concepts and then proceeded to oral reading interspersed with questions to develop and check comprehension were typical. These were similar to the kinds of lessons that occur in beginning reading instruction, although with more emphasis on comprehension than word attack skills. With students functioning at higher reading levels, the teachers typically stressed more silent reading and written assignments, but still instructed the students actively and monitored their seatwork closely.

Crawford (1983) studied instruction in elementary level compensatory education for Title I students. As noted earlier, he found that the teachers were able to successfully implement individualized instruction and to pace students more briskly through curricula in these special classes with small student-teacher ratios. In all other respects, however, the findings paralleled those from regular settings. Across grade level and subject matter, achievement gain was associated with allocation of high percentages of available time to academic activities, good monitoring and other classroom management techniques that maximized task engagement and minimized transition time and interruptions, and active instruction of the students.

Larrivee (1985) did not study instruction in special settings but did observe instruction of mainstreamed students in regular classroom settings during reading and language arts instruction in elementary classrooms. Relationships between teacher behavior and achievement gain by the mainstreamed students paralleled the findings for students in general. Achievement gains were positively associated with efficient use of time, supportive response to low-ability students, and high frequency of positive feedback to student performance, and were negatively associated with frequency of interventions concerning misconduct, time spent off task, and time spent in transitions.

In general, research in both regular and special settings suggests that the same aspects of the whole-class instruction/recitation/seatwork approach that are associated with achievement gain for students in general are also associated with achievement gain for students likely to qualify for Chapter 1 programs, but with two qualifications. First, because Chapter 1 students tend to be low in socioeconomic status and correlated cognitive ability and classroom affect factors, they appear to need even more active instruction and close supervision from their teachers than ordinary students do, and in particular they appear to need more focused, structured, and redundant teaching and more personalized and supportive interactions (but within the context of high expectations and an academic focus). Second, when assigned to special settings featuring small classes and availability of teacher aides, these students can be paced through curriculum more rapidly and can be taught using individualized materials and instructional methods that are not feasible under more typical classroom conditions.

Other Relevant Research

So far, the presentation has been confined to studies that would typically be classified as "school effects" research or "teacher effects" research. A few other types of studies should be mentioned briefly before concluding the discussion.

Conceptual Change Teaching

Recent research in mathematics and science instruction has indicated that in addition to organizing and structuring information effectively, it sometimes may be necessary to plan instruction so as to surface and confront students' prior misconceptions about the content that may persist and distort their learning if not eliminated. This research is based on the fact that instruction does not involve infusing information into a vacuum, but instead involves inducing change in students' existing conceptions. Typically, students possess prior information and conceptions relating to the content to be taught (some of which will be misinformation or misconceptions), and the new learning will be filtered through this prior knowledge for good or ill. Effective instruction will connect the new learning with the existing prior knowledge, both by taking advantage of accurate prior knowledge as a basis for anchoring the new material to what the student already knows, and by clearing up misinformation and attacking misconceptions to make sure that they do not persist and cause the student to acquire a mistaken or distorted version of the truth.

Anderson and Smith (in press) review work by themselves and others on conceptual change teaching (focusing on science instruction). Their review suggests that neither curriculum writers nor teachers typically are very aware of common misconceptions that students are likely to harbor about particular content, so that the instruction that they provide not only fails to confront these misconceptions directly but often is presented in terms sufficiently general or imprecise to allow the students to interpret the new input as consistent with their existing misconceptions, and to distort it accordingly.

Anderson and Smith have shown that teachers can succeed in surfacing and eliminating such misconceptions if given better materials and training. The materials explain the content in more explicit and detailed terms and confront student misconceptions directly, and the teacher training acquaints teachers with general principles of conceptual change teaching and with techniques for surfacing students' misconceptions (in particular, asking them to explain their answers in order to explore the thinking that lies behind them). Such training appears to be important for teachers of mathematics and science, as well as for any teachers who are presenting content that is often misunderstood or distorted because it conflicts with common but erroneous preconceptions that students acquire through everyday experience.

Teaching Cognitive Strategies

Research on instruction in reading comprehension, mathematical problem solving, and various learning and study skills is showing that it is not enough merely to briefly explain and model such skills and then allow the students to practice them; in order to understand these skills comprehensively and be able to use them in their own learning, students need explicit, detailed explanations and cognitive modeling of strategy implementation that not only demonstrates relevant actions but includes verbalization of the information processing, decision-making, and other self-talk that guides these actions. Furthermore, the modeling should not only illustrate application of the cognitive strategies involved, but should illustrate the metacognitive awareness that should occur during strategy implementation (monitoring of one's comprehension of the content as one reads along; monitoring the decisions made and the reasoning behind them when attempting to solve problems) and the affective and cognitive responses involved in responding effectively when things do not go smoothly (staying calm and oriented toward coping rather than becoming anxious or frustrated; back-tracking, looking up definitions, or searching for context clues when confronted with a word that one does not understand; double checking one's logic and computations or searching for another strategy when one's strategy for solving a mathematical or scientific problem has not succeeded).

This is not the place for a detailed discussion of strategy training research (for general reviews see Good & Brophy, 1968a and Weinstein & Mayer, 1985, and for specific applications see Bereiter & Bird, 1985; Darch, Carnine, & Gersten, 1984; Duffy et al., in press; Palincsar & Brown, 1984; Paris, Lipson, & Wixson, 1983). The work is mentioned briefly here primarily to make two points.

First, Chapter 1 students are among those most likely to need heavy doses of strategy training in addition to more traditional instruction in academic content and skills. Research indicates that the brightest students tend to develop well functioning cognitive strategies and metacognitive awareness and monitoring skills largely on their own, so that they tend not to need or benefit much from strategy training. Low achievers, however, usually do not spontaneously develop these cognitive and metacognitive skills to high levels of functioning efficiency, so they are unlikely to reach such levels unless taught systematically. It is too early to tell yet just how much can be accomplished through strategy training with low achievers, but there are important theoretical reasons for believing that such training might have great benefit, not only for equipping these students with particular strategies to use in particular situations, but possibly also for application to a broader range of learning situations. Students with well developed cognitive and metacognitive learning skills tend to approach learning tasks systematically, translate what they are learning into their own words and retain it in an organized way, and respond to confusion with redoubled learning efforts. In contrast, students with poorly developed cognitive and metacognitive learning skills, even if equally motivated, are likely to learn less and to remember less of what they do learn originally because they rely mostly on rote memorizing and other inefficient learning skills, fail to organize what they are learning for retention as a meaningful body of knowledge, and tend to skip over what they cannot understand or simply give up if they become frustrated.

A second point worth noting is that cognitive modeling is a presently underused but potentially very powerful way to instruct children in cognitive skills. The combination of modeling with verbalized self-instruction is a powerful instructional technique, especially for teaching complex processes that are guided by covert self-talk that remains hidden from the learners unless the teacher shares it with them. Students will not learn much from hearing a teacher identify the main ideas in a series of paragraphs or watching the teacher solve mathematics problems on the board if these "demonstrations" do not include verbalization of the thinking that guides the observable actions. When teachers do share this thinking, however, students not only can understand what the teacher is doing and why he or she is doing it, but can learn the general approach used to solve the problem and then apply it later when working on their own. The latter advantage makes modeling combined with verbalized self-instruction more effective than traditional lecture/demonstration methods for most instructional purposes. This is because the modeling provides the students with an integrated, within-context demonstration of how to approach and solve the problem, delivered in first person (self-talk) language. This is easier for them to retain and use than general information presented in third person language or even a set of instructions presented in second person language ("First you do this, then you do this..."). The latter forms of instruction must first be internalized and then translated into first person language to be used to guide behavior. Cognitive modeling eliminates the need for such translation, a feature that makes it especially desirable for teaching Chapter 1 students.

Mastery Learning

In theory, mastery learning approaches should be especially useful with Chapter 1 students because they were developed with low achievers in mind. According to Anderson (1985), mastery learning programs contain the following six components: (1) clearly specified learning objectives; (2) short, highly valid assessment procedures; (3) preset mastery performance standards; (4) a sequence of learning units, each composed of an integral set of facts, content, principles, and skills; (5) provision of feedback about learning progress to students; and (6) provision of additional time and help to correct specified errors and misunderstandings of students who are failing to achieve the preset mastery learning standards.

The heart of mastery learning is the cycle of teaching, testing, reteaching, and retesting. In theory, the provision of extra time and instruction to slower learners should have two important effects: (1) it will enable 80 percent of the students to reach levels of mastery commonly achieved by only 20 percent of the students under traditional methods; and (2) by insuring mastery of the earlier objectives in a curriculum sequence, the mastery learning approach will make it easier for slower learners to master the later objectives, and to do so more quickly, so that ultimately, the extra time taken earlier in the sequence will be recouped later in the sequence.

Early forms of mastery learning took the form of individualized tutoring, but later, Block and others (Block & Anderson, 1975; Block & Burns, 1976) adapted the approach for use by elementary and secondary school teachers in tandem with, rather than instead of, more traditional group-based instruction. At present, most mastery learning programs in the schools feature group-based rather than individualized instruction (Levine, 1985).

Research on mastery learning approaches indicates that achievement levels are higher in mastery classes, and that in particular, a much higher percentage of students master content believed to be basic (Block & Burns, 1976; Guskey & Gates, 1985; Walberg, 1984). However, these findings are limited and misleading in several respects. First, considerable additional learning time is required to achieve the reported gains in mastery of the material. Arrangements must be made to provide corrective instruction to slower learners before and after school, or more typically, to provide this corrective instruction during class time and thus hold back the faster learners while the teacher works with the slower learners. If differences in time taken to produce mastery are taken into account, there appears to be little or no advantage to mastery learning at all.

Another problem is that the research does not support the key assumption that taking time to insure mastery of earlier objectives will reduce the time that students need to learn later objectives (Arlin, 1984; Slavin & Karweit, 1984). Thus, it appears that instead of really solving the dilemma of having to choose between fixing time allotments and accepting individual differences in mastery levels or fixing mastery levels and accepting individual differences in time to learn, the mastery approach merely substitutes the second choice for the first.

A third problem in interpreting research on mastery learning is that the findings are extremely variable, and unfortunately, results tend to be more impressive for brief studies (lasting a week or less) involving instruction in content not normally taught at school than they are for studies of instruction in basic school subjects assessed over significant time periods (Guskey & Gates, 1985). Furthermore, although mastery learning approaches were developed with low achievers in mind, they appear to be especially difficult to implement in inner-city schools populated largely by low achievers. In part, this is because these schools tend to have high student-teacher ratios, high rates of absenteeism and transiency, high enrollments in pullout instructional programs, fewer instructional materials, and less time for groups of teachers to coordinate planning (Jones & Spady, 1985). However, it is also true that the corrective sequences in mastery learning are designed to correct relatively minor errors or misunderstandings, whereas students in inner-city schools may have a great many serious and idiosyncratic problems that need more individualized attention (Slavin & Karweit, 1984). In any case, group-based mastery learning approaches appear to be both especially difficult to implement in inner-city schools and ill-suited to the needs of inner-city students.

Chicago's experience with mastery learning approaches illustrates the difficulties involved in implementing the mastery learning philosophy in practice. With strong support from central administration, the Chicago public schools committed themselves to a mastery learning approach to elementary level reading instruction in the early 1980s. The program was entitled Chicago Mastery Learning Reading (CMLR; Jones, Friedman, Tinzmann, & Cox, 1985). The CMLR developers planned the program as a group-based approach and trained teachers in group-based mastery methods. Furthermore, they developed curriculum materials specifically designed for use with this approach, including two sets of tests to allow for both formative and summative assessment of student mastery levels. The materials and recommended instructional methods were developed with emphasis on the latest thinking in instructional design and delivery, and with emphasis on avoiding some of the problems that have appeared in earlier programs (lack of sufficient integration of subskills, excessive emphasis on testing and record keeping, concentration on lower-order objectives to the exclusion of higher-order objectives). In fact, the CMLR curriculum materials are now being used in many school systems.

Yet, with all of this going for it, CMLR did not succeed. Comparisons with traditionally taught classes revealed no differences or only very slight advantages to CMLR classes. Worse, initial enthusiasm about CMLR waned and was replaced with complaints about the curriculum materials and about difficulties in implementing and managing the program. After a change in central administration, the Chicago schools dropped CMLR in 1985.

In conclusion, available research does not support the notion of wholesale replacement of traditional instruction with mastery learning approaches in typical classrooms. However, there do appear to be potential benefits in attempting to implement at least some aspects of the mastery learning philosophy. Extra time and instruction for low achievers will enable them to master more content than they would otherwise, and this additional mastery is likely to bring motivational benefits as well.

However, the emphasis should be on maximizing each individual student's achievement progress rather than on reducing the variance in achievement levels. Because it appears that the mastery approach cannot succeed in reducing the time that slower learners need to learn (relative to the time that fast learners need), it will be possible to reduce variance in achievement progress only by deliberately holding back the faster learners. This is not to suggest that teachers should continually push faster learners to higher curriculum levels instead of allowing them to engage in enrichment activities or other alternatives to acceleration through the curriculum. However, the activities planned for faster learners should be selected for sound pedagogical reasons, and not as mere time fillers designed to slow their progress in order to pursue the (inappropriate) goal of reducing individual differences in achievement levels. A sensible compromise here seems to be to identify those learning objectives that seem most essential and see that all students master these objectives, while tolerating more variable performance on objectives considered less essential. Teachers can supplement the basic curriculum with enrichment opportunities, individualized learning packages, or learning centers that high achievers can use individually or in groups during times when teachers are busy teaching low achievers.

Individualized/Adaptive Instruction

Attempts to make schooling more effective by fitting instruction to students' individual needs have traditionally been described as individualized instruction approaches, although the terms "adaptive instruction" or "adaptive education" have been popularized in recent years (Wang & Walberg, 1985). All of these terms are difficult to discuss because they lack precise meaning and have been applied to programs that differ from one another in important ways (Berliner, 1985). Wang and Lindvall (1984) list the following as distinguishing features of adaptive education approaches: (1) instruction based on the assessed capabilities of each student; (2) materials and procedures that permit each student to progress at a pace suited to his or her abilities and interests; (3) periodic evaluations that inform the student concerning mastery; (4) student assumption of responsibility for diagnosing present needs and abilities, planning learning activities, and evaluating mastery; (5) alternative activities and materials for aiding student acquisition of essential academic skills and content; (6) student choice in selecting educational goals, outcomes, and activities; and (7) students' assistance of one another in pursuing individual goals and cooperation in achieving group goals. Few individualized instruction or adaptive education programs have all seven of these features, but most have several of them.

Individualized learning systems became popularized in the 1960s and 1970s: Individually Prescribed Instruction (IPI), the Primary Education Project (PEP), the Program for Learning in Accordance with Need (PLAN), and Individually Guided Education (IGE). Comparisons of such individualized programs with traditional instruction typically report either no differences or very minor differences, with more variation within than between the two types of program (Bangert, Kulik, & Kulik, 1983; Horak, 1981). More recent evaluations of programs classified as "adaptive education" have shown more positive results (Wang & Lindvall, 1984; Waxman, Wang, Anderson, & Walberg, 1985) although the majority of the studies reviewed were small ones involving less than 150 students and the best results appear to be associated with frequent assessment, student self-management and choice, and cooperative learning arrangements rather than with reliance on individualized progress through programmed materials.

Quality of implementation has often been a problem with individualized approaches. Reviewers often report good results in classrooms where programs were considered to be well implemented, but also report that only a minority of classrooms were so classified. Evaluations of the IGE program, for example, found that although IGE failed to bring about significant improvements in achievement outcomes, the problem was not so much that IGE was tried and found wanting as that IGE was never truly implemented in the majority of schools that presumably adopted the program. Most "IGE schools" never really did individualized instructional planning based on assessment data, and most did not implement multi-age grouping or arrange for continuous regrouping of students in response to current instructional needs, as program guidelines call for (Popkewitz, Tabachnick, & Wehlage, 1982; Romberg, 1985).

Other individualized programs experienced similar implementation problems. It appears that these problems were due mostly to inherent difficulties in individualizing instruction in typical school settings rather than to irrational teacher resistance or similar causes. One problem was that these programs usually required extra staff and supplies that were not typically found in ordinary schools. Another was reliance on individual materials that stressed isolated low-level skills and required students to learn on their own rather than in groups or with the teacher. As a result, oral reading was sacrificed in favor of worksheet activities concentrated on phonics subskills, creative writing was sacrificed for practice in spelling and punctuation, work with concrete manipulatives in mathematics was sacrificed for computational exercises, and science and social studies virtually disappeared (Kepler & Randall, 1977).

Slavin (1984) suggests that, for any kind of instruction to be effective, four conditions must be satisfied: (1) the instruction must be high in quality; (2) the instruction must be appropriate to the students' levels; (3) the students must be motivated to work on the tasks; and (4) the students must have adequate time to learn. Slavin argues that the individualized instructional programs of the 1960s and 1970s failed to work effectively in practice because they concentrated on increasing the appropriateness of instruction but did not address the other three essential conditions. Quality of instruction was reduced because the students were not taught directly by the teacher. Students were not adequately motivated because individualized instruction was often boring and seldom offered incentives for moving through the curriculum. Finally, much classroom time was spent on procedural matters (passing out materials, waiting for the teacher to check work, taking tests), to the point that time for learning was actually reduced in many cases.

Arlin (1982), Carlson (1982), Everhart (1983), and Jones et al. (1985) also provide discussion and examples of the difficulties that teachers had in implementing individualized instructional programs and the ways that what students actually experienced in the classroom fell far short of what the programs's developers had envisioned. Some of these problems are remediable: Developers can supply more and better materials, can offer a more balanced and integrative curriculum rather than overstress low-level isolated skills, and can supply multi-media components that reduce the students' needs to learn exclusively through reading. The root problem, however, seems to be the student-teacher ratio. No individualized program is likely to work effectively if it depends on the teacher to simultaneously provide individualized instruction to all of the students in the class. So, unless they are implemented in very small classes or significant help from aides or other adult resources is available, adaptive education programs will have to rely on other strategies.

Two recently developed individualized instruction/adaptive educational programs have achieved better results than the individualized instructional programs of the 1960s and 1970s. These are the Adaptive Learning Environment Model (ALEM) developed at the University of Pittsburgh and the Team Assisted Individualization (TAI) model developed at the Johns Hopkins University.

ALEM combines aspects of prescriptive instruction in basic skills with aspects of informal or open education designed to generate independent inquiry and peer cooperation (Wang, Gennari, & Waxman, 1985). It includes five major components: (1) a basic skills curriculum consisting of highly structured and hierarchically organized learning activities, along with a variety of more open-ended exploratory learning activities aimed at accommodating individual students' learning needs and interests; (2) a system for managing curricular materials and the use of teachers' and students' time; (3) a family involvement component designed to increase communication and integrate school and home learning experiences; (4) a flexible grouping and instructional team system designed to increase flexibility in use of teacher and student time, talents, and resources; and (5) a data-based staff development program that provides written plans and procedures to assist school staffs in initiating and monitoring program implementation.

ALEM is complex: it requires aides, computerized record keeping, and other specialized resources and procedures. Given these complexities and the need for frequent planning meetings and changes in physical space use and type of equipment included in classrooms, it might have been expected that ALEM would prove just as difficult to implement as most of its predecessors. However, data from over 100 ALEM-sponsored Project Follow Through classrooms show that the majority of teachers implemented the program to a very high degree of fidelity with its guidelines. There appear to be at least three reasons for this successful implementation. First, the program's developers placed great stress on implementation and developed materials and methods designed to accomplish it effectively. Second, rather than relying exclusively on materials-based individualized instruction, the program calls for introducing new content and skills through whole-class or small-group instruction before the students work individually. This makes for a higher quality of instruction and a somewhat easier teacher adjustment than switching to a totally individualized program would involve. Third, ALEM contains program elements designed specifically to orient students toward working independently with materials and working cooperatively with peers in small groups. The students are taught how to budget their time, select goals and plan methods of attaining them, monitor their understanding as they read and make responses, check their answers for accuracy, and so on.

So far, ALEM has shown that a complex adaptive education program can be implemented with high fidelity in a broad range of classrooms, and that even primary grade students can be taught to assume a great deal of responsibility for managing their own learning. ALEM requires extra resources and time devoted to planning, management, and record keeping, however, so that widespread adoption in public schools seems unlikely unless further experience with the program indicates that it offers sizeable advantages over traditional instruction. Early evaluation data on ALEM are promising in that student achievement in ALEM classrooms compares favorably with national norms and with norms projected for students in the Follow Through program, although it remains to be seen whether ALEM will produce significant advantages in student outcome beyond those produced through traditional methods.

A second recently developed innovation that avoids many of the difficulties traditionally associated with individualized instruction is Team Assisted Individualization (TAI). TAI was developed for mathematics instruction in grades 3-6 (Slavin, 1985). It combines active instruction (to small, homogeneously formed groups) by the teacher, follow-up practice using programmed curriculum materials, and a student team learning approach to seatwork management. The program was developed with the following criteria in mind: (1) the teacher would be minimally involved in routine management and checking of work; (2) the teacher would spend at least half of the period teaching students in small groups (rather than working with individuals or doing management tasks); (3) program operation would be simple enough for students in grades three and up to manage; (4) students would be motivated to proceed rapidly and accurately through the materials, and would not be able to do so by cheating or finding shortcuts; (5) mastery checks would be provided so that students would rarely waste time on material they had already mastered or run into serious difficulties requiring teacher help, and alternative instructional activities and parallel tests would be provided at each mastery check point; (6) students would be able to check one another's work (even when the checker was not as far along in the curriculum as the student being checked; (7) the program would be simple for teachers and students to learn, inexpensive, and flexible, and it would not require aides or team teaching; and (8) by having students work in cooperative, equal-status groups, the program would establish conditions for positive attitudes toward mainstreamed, academically handicapped students and among students of different racial or ethnic backgrounds.

TAI has achieved positive results in several field tests. The students have proven capable of responsibly handling the checking, self-routing, recording, and monitoring functions built into the program, and they enjoy the team reward system. Most teachers also enjoy the program and find it workable, although training procedures had to be revised to correct an early tendency for the teachers to spend too much time working with individuals and not enough with small groups. The curriculum materials also appear to be effective. Comparisons of TAI with traditional methods or other special methods have yielded higher scores for the TAI groups in every comparison. The differences are typically significant for computation tests but not significant for concept and application tests. TAI programs also showed more positive effects on social acceptance and behavior of academically handicapped mainstreamed students and improved attitudes and friendships among Black and White students.

On the whole, TAI has produced the most impressive results of all of the adaptive education programs, even though it is easier to implement than most and does not require additional instructional personnel or significant additional resources. Slavin (1985) cautions, however, that the program is difficult to implement in inner-city classrooms containing high concentrations of students with serious reading or behavior problems where neither teachers nor students may be prepared to handle the increased responsibility and autonomy that students assume in TAI classes.

Computerized Instruction

In theory, computerized instruction has the potential for avoiding the problems associated with individualized learning systems developed in the 1960s and 1970s, especially now that microcomputers are becoming more available in classrooms. Assuming comparable instructional content, computerized instruction offers several potential advantages over conventional textbooks or programmed learning materials.

First, it brings novelty or at least variety to the students' school experiences, and thus is likely to be experienced as more enjoyable than conventional seatwork. Second, especially if combined with videodisc technology, it can incorporate animation, time-lapsed photography, and other audio-visual techniques for communicating information and demonstrating processes in ways that are not possible through conventional print materials. Third, it can allow students to respond more actively and in more varied ways than they can respond to conventional seatwork, and can provide them with immediate feedback following their responses. Fourth, computers can be programmed to keep track of students' responses, thus accumulating records for teachers to use in monitoring progress and planning remedial instruction. Fifth, it may be possible to build the capacity for diagnosis and prescription right into the program itself, so that students are automatically routed to skip parts that they do not need and to work through remedial sequences when they have not been able to achieve mastery by working through the regular program. Sixth, programs may provide not only opportunities to practice and get feedback, but tutorial instruction and friendly encouragement similar to what the student might receive from a skilled and sensitive tutor. Finally, computerized instruction can provide opportunities for higher-level problem solving and simulation activities of the kind seldom seen in conventional seatwork or programmed individualized instruction. To the extent that these potential advantages can be achieved at reasonable cost, transferring significant instructional functions from the teacher to the computer might be a feasible way of implementing adaptive education principles in typical school settings.

However, it remains to be seen whether computerized instruction's theoretical potential can become a practical reality. Reviewers interested in computer applications to ordinary classroom settings have identified several important limitations on the computer's present and potential impact (Amarel, 1983; Becker, 1982; Brophy & Hannon, 1985; Educational Products Information Exchange, 1985; Lesgold, 1983; Sloan, 1985).

One major problem is availability of appropriate software. The majority of programs available even today are nothing more than electronic versions of traditional workbooks providing drill and practice on low-level skills. Once the novelty of using the computer wears off, a steady diet of these programs is likely to be just as boring as a steady diet of comparable workbook exercises, and even less efficient (students with a basic grasp of the concepts and skills involved can move quickly through workbook pages when they know how to respond and are sure that their answers are correct, but in working through a computerized version of the same exercise, they would have to take time to type in each response and then wait for confirmation before the program would allow them to go on to the next item). Also, most programs are short (requiring only an hour or two at the most to complete) modules designed to provide drill and practice on just one or a small set of related skills. They are not systematically sequenced and integrated curricula designed to provide a full semester or year of instruction in a conventionally taught elementary or secondary level course. Thus, teachers may have difficulty finding good software, and even when they do, they are likely to be unclear about when or how to use the program because it will not be integrated with the officially adopted curriculum objectives and materials that drive their instruction. Consequently, most teachers tend to use computerized instruction just for enrichment with faster students or remedial drill and practice with slower students, even if they are not hampered by the problems discussed below.

Limited access to computers creates additional feasibility problems. Cost considerations (including future projections) are such that school systems are unlikely to supply typical classrooms with more than one or two microcomputers (except for classrooms equipped for instruction in computer programming). A great many more computers would be needed to implement programs that call for students to spend significant time at the computer. For example, survey data indicate that even in classrooms containing eight computers, students may spend as much as three-fourths of their time waiting for a turn at the computer (Center for Social Organization of Schools, 1984). This problem can be alleviated somewhat by having students work in small groups with a single microcomputer, although almost all of the presently available software was designed for individuals, and adaptation for use by groups may sometimes be difficult.

A related problem is the trade-off between computer cost and capacity. Many of the most interesting instructional possibilities in computerized instruction require videodisc technology in addition to microcomputers, and programs that make possible the most desirable and sophisticated advances over ordinary programmed instruction (interactive simulation exercises and games; tutorial programs that provide diagnosis and corrective instruction in addition to mere drill and practice with feedback; provision for automatic record keeping and preparation of diagnostic performance summaries) require mainframe computers that are vastly more powerful and expensive than microcomputers.

Therefore, in the near future at least, teachers' options for integrating computerized instruction into their classrooms would be limited to drill and practice programs and educational games prepared for use by individual students on minicomputers (some of which may be adaptable for use by small groups of students). Thus, computerized instruction is not yet a solution to the practical problem involved in implementing individualized instruction in the typical classroom. On the other hand, it offers opportunities worth exploiting for teachers who have access to microcomputers. An evaluation of a computerized drill and practice curriculum tested in the Los Angeles schools (Ragosta, Holland, & Jamison, 1981) found that even though the students often complained of boredom, the program had a positive impact on mathematical computation skills. Findings were mixed for mathematical concepts, and were less positive in language and reading than in mathematics.

Tucker (1981) provides useful advice on how schools can systematically prepare to make intelligent decisions about purchasing and using microcomputers. Lathrop (1982) provides guidelines and a useful bibliography for evaluating the quality of software. Finally, the Educational Products Information Exchange (1985) provides descriptions and critical reviews of hundreds of software products being sold for use in schools.

Conclusions

The last 15 years have finally produced an orderly knowledge base linking teacher behavior to student achievement. As would be expected given the nature and complexity of teaching, this knowledge base consists of a large number of low to moderate correlations rather than a small number of very high correlations. This fits well with the common sense notion that effective teaching involves mastery and orchestration of a large number of teaching skills suited to particular situations rather than continued performance of a few presumably generic "effective teaching behaviors."

If applied with proper attention to its limits, this knowledge base should help improve teacher education and teaching practice. However, several important limitations and qualifications need to be kept in mind. First, as noted previously, process-outcome data (or any scientific data) do not translate directly into policy decisions. Such data can identify efficient methods for accomplishing given goals, but policy makers must set priorities among potential goals on the basis of values, not science.

Second, achievement gain was the only outcome considered here in detail. Fortunately, it appears that most of the teacher behaviors associated with achievement gain (and especially the supportive and encouraging teacher behaviors associated in particular with achievement gain by low achievers) will also be supportive of progress toward affective goals, at least up to a point. However, it should be recognized that it is possible to optimize progress toward several different goals simultaneously only to some degree, so that eventually, further progress toward one goal will come at the expense of progress toward others.

Third, causal linkages between teacher behavior and student achievement gain are not always well established, and even when they are, analysis and interpretation are needed to identify prescriptions for practice. For example, a positive correlation between a teacher behavior and student achievement does not necessarily indicate that the behavior should be maximized (even within the observed range, let alone the theoretical range). Thus, it would be inappropriate to conclude that teachers should always wait at least three seconds for a response to a question, should never criticize students, or should never schedule independent seatwork. To develop sensible recommendations, it is necessary to consider the means and ranges of variation in observed teacher behaviors, along with the contexts within which the behaviors occur and the patterns of relationship with other teacher behaviors and with student behaviors. In what contexts is this teacher behavior an option? What other options are available in the same contexts? When is this behavior the option of choice, and why? Answering such questions requires detailed knowledge about process-process as well as process-outcome relationships (and more generally, a familiarity with classrooms and how they work). They are not well addressed, let alone answered, through simple-minded box scores and meta-analyses.

It also should be recognized that there may be different but functionally equivalent paths to these same achievement outcomes. For example, it may make no important difference whether the three main points of a presentation are summarized at the beginning or the end, so long as they are summarized, or whether a mathematics computation review is done with flash cards during a lesson or through a seatwork assignment afterwards. Such complexities have rarely even been considered, let alone investigated systematically, and this is one reason why data linking teacher behavior to student achievement should not be used in rigid ways for teacher evaluation or accountability purposes. If teachers are to be evaluated according to the achievement gains they produce, these achievement gains should be measured directly. Teachers should not be penalized for failing to follow particular behavioral prescriptions if they produce as much achievement as other teachers who follow such prescriptions.

Most process-outcome findings were based on natural variation observed in traditionally taught classrooms, so that generalization of these data is limited to such classrooms. Also, prescriptions for application should remain within the ranges of behavior observed. Simple-minded extrapolations beyond these ranges (such as, if 15 minutes of homework per night is good, two hours per night would be eight times better) are not supported by the data and are probably counterproductive. Unfortunately, such extrapolations are common in certain school improvement programs.

Finally, most findings must be qualified by grade level, type of objective, type of student, and other context factors. Even within context, it seems likely that most relationships between quantity (as opposed to quality) measures of teacher behavior and measures of student outcome will be ultimately curvilinear, so that all recommendations based on such relationships will need to have boundary conditions specified. Too much of even a generally good thing is still too much.

Despite the need for limitations and qualifications, two common themes cut across the findings. One is that academic learning is influenced by the amount of time that students spend engaged in appropriate academic activities. A second is that the students learn more efficiently when their teachers instruct them actively by structuring new information and helping them relate it to what they already know, and then monitoring their performance and providing corrective feedback through recitation, drill, practice, and application activities. For a time, these generalizations appeared to be confined to the early grades or to instruction in basic rather than more advanced skills. However, it now appears that they apply to instruction in any body of knowledge or set of skills that has been sufficiently well organized and analyzed so that it can be presented systematically and then practiced or applied during activities that call for student performance that can be evaluated for quality and (where incorrect or imperfect) given corrective feedback. This certainly includes aspects of reading comprehension and mathematics problem solving in addition to word attack and mathematics computation. Even for higher-level complex learning objectives, guidance through planned sequences of experience is likely to be more effective than unsystematic trial and error.

The key to maximizing achievement gains of Chapter 1 students (or any students, for that matter) appears to be maximizing the time that they spend being actively instructed by their teachers or supervised as they work on assignments (assuming that both the instruction and the assignments are pitched at an appropriate level of difficulty and otherwise well suited to the students' current needs). The traditional whole-class instruction/recitation/seatwork approach maximizes the time that students spend being directly taught or supervised by the teacher, but may not provide instruction or assignments that are well matched to the students' individual needs if the class is heterogeneous. Small-group instruction allows for more personalized and somewhat more individualized instruction during small-group lessons, but requires students to spend a great deal of time working independently without close teacher supervision. Individualized instruction does the best job of matching assignments to individual needs, but the instruction is of lower quality because it comes mostly from the materials rather than the teacher, and students spend most of their time working independently without close teacher supervision (except in classes with small student-teacher ratios).

Any one of these approaches (or combinations of them) can be made to work under certain circumstances, depending on class size, availability of aides, availability of materials and assignments for differentiated instruction, the teacher's planning and classroom management skills, and other factors. In typical classrooms, however, traditional approaches are both easier to plan and manage and likely to offer a more attractive mixture of compromises and trade-offs than any of the feasible alternatives. Thus, most teachers are likely to opt for whole-class instruction (small-group instruction for beginning reading) featuring teacher explanation of content or demonstration of skills followed by recitation, drill, or discussion activities, followed by seatwork and homework assignments designed to provide practice and application opportunities. Within this whole-class approach, teachers can provide a degree of individualization by spending more time with low achievers, introducing a degree of differentiation in assignments and grading criteria, planning special projects or learning centers to provide enrichment opportunities for faster learners and remedial instruction and assignments for slower learners designed to see that they master basic concepts and skills, and (where appropriate) including cooperative learning activities in addition to independent seatwork. If an aide is available and trained to supervise seatwork effectively while the teacher instructs small groups, the teacher can schedule more small-group instruction and thus differentiate instruction more systematically. If the class is small enough, individualized instruction and assignments may become feasible. Ideally, however: (1) the teacher should carry the content to the students rather than depend on curriculum materials to do so; (2) the teacher should actively circulate and supervise progress during seatwork times; and (3) students who need help should be able to get it immediately.

Unless they are trained from the beginning in a particular program such as DISTAR (Englemann & Bruner, 1975) or ALEM, teachers should probably receive systematic training in the classroom organization, lesson presentation, and seatwork management skills involved in effective implementation of the traditional whole-class instruction/recitation/seatwork approach. At minimum, this will provide them with a "starter set" of instructional skills that are known to work in typical classroom settings and that, in combination, constitute a systematic method of teaching that works reasonably well in its own right and that also forms a base from which the teacher can begin to phase in grouping, differentiated instruction, cooperative learning methods, and other adaptations. Resource books useful for accomplishing this are becoming available (for example, see Good and Brophy, 1984), and inservice training programs such as Teacher Expectations and Student Achievement (TESA), Madeline Hunter training, or the videotape program on effective teaching skills offered by the Association for Supervision and Curriculum Development cover many of the principles and skills reviewed here.

Ultimately, however, the most effective responses to the needs of Chapter 1 students (and to students in general, for that matter) will be the systematic development of comprehensive programs of curriculum and instruction that draw eclectically but planfully from the full range of available knowledge in devising effective methods of accomplishing specified goals. More information is badly needed about what constitutes effective instructional units (not just specific lessons or seatwork assignments), and about effective curriculum alignment and integration of program elements within and across subject matter. So far, discussions of curriculum issues tend to be confined to philosophical argument without enough empirical input or testing of assumptions, instructional design models (Reigeluth, 1983) have not given much consideration to instruction as it occurs in classrooms, and process-outcome research conducted in classrooms has concentrated mostly on quantity rather than quality of instruction and has not paid enough attention to curriculum objectives and to pedagogical issues specific to the content or skills being taught.

Some progress is being made, however. Process-outcome researchers are getting more sophisticated about curriculum and designing studies that are much more circumscribed and specific in terms of grade level, subject matter, and curriculum objectives. Also, program developers are beginning to pay attention to accumulated research findings. In contrast to the 1960s, when Project Follow Through encouraged developers to differentiate their programs from other programs, contemporary program developers are concentrating on quality and comprehensiveness rather than uniqueness, borrowing elements from eclective sources and weaving them into integrated approaches. The ALEM and TAI programs mentioned earlier are examples.

Another example is the Kamehameha Early Education Program (KEEP), a beginning reading program developed for socioeconomically disadvantaged children in Hawaii (Au et al., 1985). Among other things, the program includes intensive small-group instruction in reading to children grouped on the basis of criterion referenced test results, emphasis on maximizing students' attention to lessons and engagement in assignments, instruction in phonics conducted within an emphasis on reading for meaning, instruction in reading comprehension strategies in addition to word attack skills, learning centers in which students work independently on activities that support the overall reading instruction program, and lesson participation rules that capitalize on native Hawaiian cultural traditions and minimize the degree to which school norms clash with these traditions. The program exemplifies the comprehensive and eclectic recommendations for effective reading instruction made by the authors of Becoming a Nation of Readers (Anderson, Hiebert, Scott, & Wilkinson, 1985), based on systematic review of the literature on curriculum and instruction (including classroom teaching) in reading. To the extent that the needs of Chapter 1 students can be met with existing school resources, it will be through development and revision of such comprehensive, research-based programs.

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GROUPING LOW-ACHIEVING STUDENTS FOR INSTRUCTION

by

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GROUPING LOW-ACHIEVING STUDENTS FOR INSTRUCTION

Grouping for Instruction Within Classroom

Placing students in groups for instruction is a common practice in American classrooms, including those in which Chapter 1 students are instructed. Instructional groups led by the teacher are found in elementary schools and are used most often for reading instruction, and occasionally for mathematics; they are rarely used for other curricular areas. Some have argued that grouping students according to their ability for teacher-led instruction may be beneficial because it raises students' attentiveness and gives them more individualized instruction. Grouping students allows teachers to work with a smaller group of students that is homogeneous with respect to students' aptitude and their preparation for the academic material to be taught.

All-student groups that are not led by the teacher are also found in American classrooms. Prior to the interest in grouping for instruction, students were discouraged from interacting with each other. Talking during class time was regarded as disobedient behavior, even when students asked classmates questions about the lesson. Recently, teachers have been placing students in small groups for instruction in reading or mathematics; students work together individually on assignments. Research on these groups has shown that certain kinds of student interactions that occur within these all-student groups can be beneficial to learning.

This paper provides an overview of research and theory on within-class grouping for instruction, including how groups are formed and managed, how students interact in groups, and how grouping affects students' achievement, with particular concern for low-achieving, Chapter 1 students. After reviewing the traditional theoretical approaches to the study of grouping in classrooms, the paper introduces a model that serves as a framework for integrating research on grouping, followed by a review of the major findings and issues in this literature. Finally, the implications of the research for educating Chapter 1 students are given.

Theoretical Approaches to the Study of Classroom Grouping

Research on classroom groups has tended to follow one of four distinct traditions; sociological, sociolinguistic, process-product, and cooperative learning (Peterson, Wilkinson, & Hallinan, 1984). Sociological researchers have been concerned with the formation and assignment of students to groups, and the consequences of grouping patterns for students.

Sociolinguistic researchers have focused on the use of language in classrooms. Process-product researchers have studied processes of teacher-student interaction in an attempt to determine how those processes facilitate students' achievement. Finally, cooperative learning researchers have studied the effects of students' working together in small groups in which tasks and rewards are highly interdependent among students.

In addition to having distinct foci, the research traditions have differed in research methods. Sociologists have been interested in determining the basis for grouping patterns that exist within the school, and the extent to which the patterns encourage the differentiation of students in social status and educational level. This research often uses large-scale surveys. The variables studied typically include students' ability, social status, and achievement as measured by questionnaires and tests that are given to a large number of students and teachers. Statistical analyses such as multivariate regression are used to test the relationships among these variables. In general, sociological researchers have been concerned with organizational structures (e.g., classroom grouping patterns) and their effects on students' outcomes (e.g., achievement), but have given little attention to processes in the classroom that mediate these effects.

Cooperative learning researchers have studied variations in the ways that students work together to complete assignments and receive evaluations and rewards for their work. Slavin (1980) notes that the major types of cooperative learning techniques differ along five dimensions: the interdependence among students in working on the task and receiving rewards, the extent to which the teacher imposes structure on the assignment, the amount of competition between groups, and the extent to which individual students are accountable for their own work. Typically, in these studies, a particular cooperative learning technique is compared with a control group, within a school, and effects on students achievement are measured. Like the sociological researchers, those who investigate cooperative learning have concentrated on organizational structures (i.e., cooperative learning techniques) and their effects on student achievement.

In contrast, sociolinguists and process-product researchers have studied student-student and teacher-student interaction process directly and have examined their effects on students' outcomes. Sociolinguistic analyses consist primarily of descriptions of interactions in classrooms. Techniques of descriptive and observational research, such as naturalistic observation, linguistic field description, ethnography, and participant observation are often used. For example, some have studied teachers' and students' use of language in reading groups (e.g., Eder, 1982; Wilkinson & Calculator, 1982).

Some process-product researchers have typically investigated the effects of different patterns of instructional grouping on the processes that occur in instructional groups in the classroom (Good, 1981). Other process-product researchers have studied those cognitive components of classroom processes that facilitate students' achievement (e.g., Swing & Peterson, 1982). Recent research on assigning students to small groups and encouraging them to teach each other suggests that all-student groups may be particularly effective, at least for some kinds of students (Peterson & Janicki, 1979; Peterson, Janicki, & Swing, 1981; Swing & Peterson, 1982; Webb, 1982).

Integrating the Research on Classroom Grouping

Recently, we proposed a framework for integrating research on grouping for instruction in classrooms (Peterson, Wilkinson, & Hallinan, 1984). Figure IV-4 displays this model. The model shows the variables that have been addressed by previous research and theory: (a) student diversity; (b) variations in classroom organization; (c) teacher-student and student-student interactional processes; and (d) student outcomes. Hypothesized relationships among these variable are also shown.

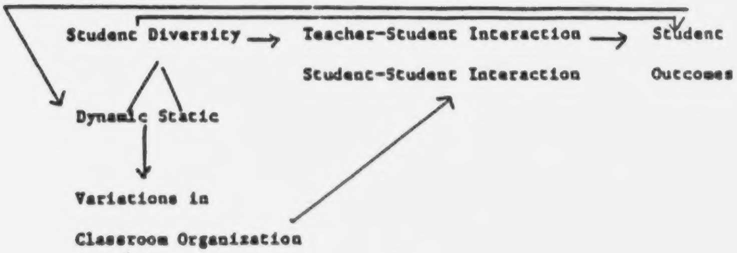
Student Diversity
Teacher-Student Interaction
Student-Student Interaction
Student Outcomes
Dynamic
Static
Variations in Classroom Organization

Figure IV-4. Model for Integrating Research on Classroom Groups

The model is interdisciplinary, because we believe that interdisciplinary and multidisciplinary perspectives can stimulate research addressing questions that have not been answered conclusively by existing research within any single tradition. For example, sociologists have studied the effects of ability grouping on students' achievement; yet after three decades, this research has been inconclusive (Sorenson, 1978). Understandings generated from sociolinguistic and process-product studies about mechanisms through which ability groups have their effects may someday resolve the ambiguities in the sociological literature (Hallinan, 1984).

Our model can be understood by examining each of four variables, and by examining hypothesized relationships among these variables. Student diversity includes students' ethnicity, linguistic-cultural background, socioeconomic status, gender, age, ability, motivation, prior achievement, and personality. Student diversity consists of dynamic characteristics (those that can be changed) and static characteristics (those that cannot be changed). For example, dynamic characteristics include motivation and prior achievement, whereas static characteristics include gender and ethnicity.

Although researchers in all four traditions have considered student diversity, they have tended to focus on different aspects. Sociologists have tended to focus on measured ability and social status; whereas sociolinguists have considered ethnicity, language knowledge, gender, prior achievement, and attributed ability. Process-product and cooperative learning researchers, to the extent that they have considered student diversity, have focused primarily on student ability and prior achievement.

The second major variable, variations in the classroom organization, includes heterogeneous and homogeneous ability grouping in reading and mathematics, teacher-led instructional groups in reading and mathematics, and use of all-student groups in the classroom. There are variations in size, and composition of the group, and in the nature of the task and reward structure, such as the degree of interdependence among students. Another important variation is whether the group is student-led or teacher-led.

The third variable, teacher-student and student-student interactional processes, includes the type of explaining given by the students and by the teacher in small groups, the kinds of requests for information and action used by students, and the amount of time a student is on-task or engaged in learning.

The fourth variable, student outcomes, includes scores on standardized achievement tests in reading and mathematics, and students' daily achievement as measured by grades on daily assignments, and tests that are constructed by teachers. Affective and social outcomes such as students' social skills and motivation are also included in this category of variables.

The arrows in the model designate hypothesized relationships among the variable. Both student diversity and variations in classroom organization are hypothesized to affect the quality, amount, and kind of teacher-student and student-student interactions that occur in classrooms, which, in turn, mediate between student diversity and student outcomes and also between variations in classroom organization and student outcomes. This latter relationship makes the model a recursive, since student diversity is a potential cause of variation in students' outcomes, such as achievement, motivation and social skills, and student diversity is in turn affected by students achievement, motivation, and social skills.

Major Research Findings and Issues

Instructional grouping in classrooms is a common practice in American schools, particularly at the elementary level for reading and mathematics. Despite the prevalence of this practice, research on within-class grouping is limited, and research specific to Title I students does not exist. Two key issues have emerged from the extant research and will guide this review: (1) the bases on which students are assigned to groups, including the formation and stability of groups; and (2) the patterns of consequences for students of interactional processes in instructional groups.

Bases and Formation of Instructional groups

This issue is linked to variations in classroom organization in our model and includes the effects on student diversity. The most common basis for within-class grouping is student ability, and there is substantial evidence to support the conclusion that the teachers' goal is to create and maintain instructional groups that are homogeneous with respect to student's ability (Hallinan, 1984). When teachers vary the composition of instructional groups with respect of other student characteristics, such as ethnicity, they seem to do so without abandoning the homogeneous ability group (Hallinan, 1984). Groups that are heterogeneous with respect to ability are seldom reported or studied.

For example, Hallinan and Sorenson (1984) studied the role of race in within-classroom ability group assignments in fourth through seventh grades. The data showed that while racial composition of classrooms did effect the formation of ability groups, race in itself was not a criterion for assigning students to ability groups. Teachers used achievement tests as criteria, but also used recommendations and prompting from parents and other teachers. Since parents of lower SES tend to be less involved in the process of schooling than middle and upper SES parents, and since Blacks are highly represented in lower SES, one would have expected students' race to have an influence on teachers' formation of instructional groups.

Teachers apparently used results from the tests differently for Black and White students in forming groups.

Hallinan and Sorenson (1984) also report that students had a higher probability of being assigned to a high-ability group in lower grades. A direct implication of this finding is that grade level does effect grouping assignments and, possibly, the effectiveness of group functioning. While for some students, being involved in a higher-ability group at an earlier age may be a motivation for others, their inclusion in a high-ability group may be intimidating and therefore inappropriate. This tendency may initiate a cycle of low involvement in school and declining achievement.

In practice, factors other than individual students' ability or academic achievement appear to determine teachers' assignment of students to ability groups. Dreeban (1984) has argued that ability grouping within classes is a logical response to the problem of how to transform a classroom of diverse students into suitable units for instruction. He reports that factors affecting the assignment of students to within-class ability groups include the following: the distribution of student aptitudes or achievement in the school or classroom, organizational constraints within the school or classroom, and student management and discipline. Teachers consider the number, size, and diversity of students within groups when assigning them to groups in their classrooms.

Dreeban (1984) reports that the number of within-classroom groups can be predicted by: the size of the class, availability of materials, preparation of lesson plans, and the teachers' difficulty of simultaneously supervising many groups while instructing only one. Generally, if the class is large and consists of students who vary widely in ability and achievement, teachers form at least three groups. Availability of materials for instruction and concern about discipline of students dictate the size of groups, so that there may be groups of unequal sizes within one classroom. Groups that have been formed on the basis of one student characteristic, such as ability, may vary widely on other dimensions, and yet, instruction is geared to the level of ability attributed to the group.

Thus, while instruction appears to be closely linked to patterns of within-class grouping, learning may not be so clearly associated. Membership in reading groups, has been found to be fairly stable after the first month of school (Eder, 1982; Groff, 1962; Hawkins, 1966; Weinstein, 1976; Wilkinson & Calculator, 1982; Wilkinson & Spinelli, 1983). This tendency towards permanent assignments is not confined to elementary school (Hallinan, 1984). Rosenbaum (1980) provides evidence that ability groups at the junior high and high school levels tend to endure for relatively long periods of time, and mobility seems to be only downward.

The implications of this research for low achievers direct our concern to the initial assignment and apparent endurance of ability groups. Some research suggests that grade level effects group assignment and possibly group effectiveness. The developmental level of students needs to be considered by teachers when they form groups. Students should be reassigned to different ability groups, higher or lower, if their achievement indicates it during the school year. Individual students' learning may be maximized when groups change frequently or divide often. When forming groups, teachers should overtly consider students' needs and strengths first, even as they are cognizant of situational constraints. Labeling students as members of low-ability groups, in the case of homogeneous grouping, could be detrimental to students' self-esteem. This practice may initiate a cycle of self-fulfilling prophecies by both students and teachers that would result in continued under-achievement.

Patterns and Consequences of Interactional Processes

This issue is linked to teacher-student and student-student interactional processes, including possible effects of student outcomes. Researchers from the sociolinguistic and process-product research traditions have studied the processes that occur within ability groups. There is substantial evidence that the interactional processes within groups, between students and teachers and among students themselves, differ widely across ability groups, with a decidedly negative learning environment often occurring in the homogeneous low-ability groups. This environment is associated with negative outcomes in achievement for low-ability students. These findings are particularly troubling since the most frequent practice with Title I students is to pull them out of their regular classes for special instruction in reading and math.

Research from the cooperative learning literature, which focuses on the relationship between variations in classroom organization and student outcomes (while ignoring the mediating effects of interactional processes) does not show uniformly negative findings for grouping of low-ability students. In fact, some positive outcomes are noted for the learning of low-ability students. First we will consider the findings from the sociolinguistic and process product traditions, divided into two sections, one that focuses on teacher-led homogeneous reading ability groups, and one that focuses on all-student, heterogeneous ability groups in mathematics. Then we will consider the cooperative learning studies.

Homogeneous ability groups that are led by the teacher. It is helpful to consider the kind of groups that has been prevalent and has been studied in elementary schools: the homogeneous reading ability group. Reading groups are unique in their task orientation and organization since they cannot be classified as either cooperative (shared goal, interdependent) or competitive (individual goal, independent, one "winner" only). Instead, the groups are organized around individual tasks, with each student usually having the same task in the group, yet students are encouraged to be cooperative and help each other so that all students complete the task. Rewards are individually distributed, yet one student's receiving a reward does not preclude another student's receiving a reward also, as it would in a competitive model. In addition to individual rewards, the group may be reprimanded or rewarded as a whole for its behavior (Wilkinson, Clevenger, & Dollaghan, 1982).

In elementary school, research shows that students in homogeneous low-ability reading groups fare poorly. Students in low groups receive less time to read in comparison with students in high groups; oral reading errors made by lows are more frequently corrected than those made by highs (i.e., they are interrupted more frequently); lows are given more instruction in decoding and teacher prompts are more focused on phonics for lows than for highs; lows are frequently less attentive than highs (Allington, 1980; Eder, 1981, 1982, 1983, and 1984; Good & Marshall, 1984; Rist, 1970; Stern & Shavelson, 1981).

Eder (1981) argues that these practices result in lower reading-test performance and lower oral-reading grades for the low-ability groups. The poor achievement of the lows is thus the result of low expectations by the teachers and/or the poor quality of teaching that they receive. At first glance, these studies suggest that the differential treatment received by the low-ability students is the culprit, the cause of their poor reading achievement.

In another study, Eder and Felmlee (1984) examined developing attentional norms in homogeneous ability groups. They found that the lower groups seemed to have more difficulty staying on task and were easily distracted by other students. In comparison, students in high-ability groups seemed to tract the task at hand conscientiously and punish fellow group members who wandered off the task.

The implications for low-achieving students seem clear: homogeneous ability grouping is detrimental to learning for students assigned to low groups (Eash, 1961; Persell, 1977). Studies reveal mechanisms through which the negative effect of assignment to a low-ability group occurs. There are differences in the instructional processes and learning environments of different ability groups. Teachers and students interact in different ways across ability groups. We are compelled to agree with Hallinan's (1984) conclusion that the majority of studies show that assignment to a low-ability group places students at a disadvantage because of diminished opportunities to learn.

However, we must also consider another possible interpretation of the data from these studies: That the low-ability students are, in fact, receiving appropriate instruction, given their level of performance and achievement (Alpert, 1975). Aside from the finding that low readers received less time in reading instruction than did high-ability readers, all of the other aspects of teaching methods used in the low reading ability groups noted in these studies could be justified by the students' poor reading skills. Low-ability students may need the kind of instruction that has been observed in order to progress to higher levels of reading skills. For example, low-ability readers tend not to apply phonic pattern information when reading, and they make more misleading oral reading errors, resulting in distortion of text meaning. Their errors indicate little or no attention to linguistic patterns, thus reflecting a lack of skill to decode unknown words by applying phonic pattern information (Calfee & Drum, 1986). Teachers' attention to phonics and errors may, in fact, not be detrimental to poor readers who are attempting to acquire reading skill.

Heterogeneous ability groups that are not led by the teacher; all-student groups. There have been several studies examining all-student interaction within heterogeneous (mixed ability level) groups, primarily for mathematics instruction, and in one case, for homogeneous reading ability groups. By and large, the data from elementary and secondary school populations are remarkably consistent. Low-ability students seem to benefit in achievement by being placed in small, heterogeneous ability groups. In addition, some data show that both high and low-ability students obtain higher achievement after working together within heterogeneous groups.

For example, Swing and Peterson (1982) studied fifth-grade students, who were divided into heterogeneous ability level groups (each group consisting of one high-ability student, two medium-ability students, and one low-ability student). The students were taught how to interact with other students on-task and how to improve their skill at providing explanations to other students. Subsequently, the students' interactions with each other were studied as they completed their seatwork during mathematics class; their achievement was measured. The data showed that certain students' behaviors were positively related to achievement: (1) for the low-ability students, these included receiving procedural, and conceptual-sequencing explanations; greater participation in task-related activity, and greater answer checking; (2) for the high-ability students, these included providing conceptual-sequencing explanations, and these students tended to give more procedural explanations and participate in more task-related activities. Medium-ability students did not show positive relationships between interactional behaviors and achievement.

The implications of this study for low-ability students are clear. Their achievement can be enhanced by eliciting student responses, providing feedback, and tightly organizing material. Swing and Peterson (1982) believe that these less mature learners need more regulation by others to guide and monitor their progress through the steps necessary to complete the assignment. To the extent that small-group learning experiences, such as the one reported here, can provide low-ability students with what they need to support their learning (e.g., involvement in the task, active learning, and opportunities for providing and receiving conceptual sequencing explanations), then they should be used.

Swing and Peterson (1982), and other studies (e.g., Cohen, 1984; Webb, 1982, 1985; Webb & Kenderski, 1984; Peterson, Wilkinson, Spinelli, & Swing, 1984) provide evidence that small, heterogeneous ability group can provide learning environments that are positive for learning, at least for some students. Other examples include Peterson, Wilkinson, Spinelli, and Swing's (1984) study, in which we identified students who acted as "task-masters" and served as models for pacing and managing time efficiently in order to complete the task. These students provided managerial explanations, made procedural requests, provided answers to questions, and engaged in answer checking, which appeared to increase their own motivation to complete their work, with the eventual result of increasing their own achievement. Peterson (1986) has concluded that students can learn effectively in small cooperative groups because they become actively involved in learning rather than just passively receiving information.

Cohen's (1984) research provides cause for concern about the relative opportunities for low achievers to actively participate in small-group experiences that facilitate learning. She examined the relationship among students' status, interactions and achievement, in a population of bilingual elementary school students. Her findings show that these factors are interrelated. The more the students talked and worked together, the more they learned from the curriculum. The implications from Cohen's study are not all rosy, however, since the most popular and attractive children also had high status in the class and were most often asked for help. The ordering of students according to their social status was thus maintained and perhaps even enhanced in this type of learning environment. The findings of Lindow, Wilkinson, and Peterson (1985) also show that low-ability students had fewer opportunities to demonstrate to other group members what they did know, and thus had fewer opportunities to receive feedback on the adequacy of their knowledge. A related series of studies of elementary reading and mathematics groups provides evidence that low-ability students remain low achievers throughout the school year, and show a lack of skill at requesting and providing needed information during seatwork (Wilkinson & Calculator, 1982; Wilkinson & Spinelli, 1983; Wilkinson & Genishi, 1986). All-student heterogeneous groups may serve to maintain the status quo, unless teachers intervene to change the nature of the interactional processes in the direction that is beneficial for all students.

Cooperative learning studies: Slavin (1980) provides a comprehensive review of research on specific cooperative learning techniques, another approach to within-class grouping. In cooperative learning techniques, students work in small groups and receive rewards or recognition based on their group performance. The techniques are not as common in classrooms as traditional, teacher-led elementary reading groups. He reviewed 28 field studies that provide several instances of the major cooperative learning techniques. Although it is difficult to make direct comparisons about the efficacy of each technique, since each was compared with a control group rather than to another technique, the findings show some consistency. Overall, there is evidence that cooperative techniques show positive effects on academic achievement, but these effects are fully dependent on the particular settings, measures, designs, and populations. Slavin does make an inference about comparisons across techniques by combining evidence from the Small Group Teaching (SGT) study and the overall finding that Student Games Tournament (TGT) and Student Teams Achievement Division (STAD) and other techniques with high reward interdependence appear to be more effective on academic achievement than techniques with lower reward interdependence.

Sharan (1980) found that the Small Group Teaching program was superior to the control group in affecting only higher-order cognitive skills, such as concept identification. Slavin points out that the types of instruments used to measure academic achievement in many of the studies place greater emphasis on the basic skills than higher-order skills. Thus, one interpretation of these data is that when team structures are used to motivate students toward a reward, as in TGT or STAD, the students review the assignment until every student has mastered it. Team structures in this case, then, do not foster the combining of individual contributions, and this may be effective when the academic goal is the learning of basic skills. However, team structures can be used to facilitate mastery of higher-order skills, as in the SGT approach, when students are encouraged to share ideas.

Cooperative learning techniques also appear to have a positive effect on race relations, as shown by greater cross-racial choice of friends among students. In addition, some studies suggest an interaction between ethnicity and treatment, because minority students appear to gain academically as a result of participating in cooperative learning more than do White, middle-class students.

In sharp contrast with the sociological, sociolinguistic and process-product findings, students do not seem to be at a disadvantage when they participate in cooperative learning. In fact, cooperative learning may be a better environment (compared with traditional approaches) for teaching basic skills, as long as there is a structured and highly focused schedule of instruction, individual accountability among student team members, and a well-defined group reward structure. For mastery of higher-order skills, less structured techniques such as SGT may be more effective than traditional approaches.

The implications for low-achieving students seem clear. To the degree that a student's low ability is function of a lack of basic skills, cooperative learning techniques such as TGT and STAD are likely to improve that student's academic functioning. If students' low achievement stems from deficits in higher-order cognitive processing, techniques such as SGT may be an improvement over traditional, individual or whole-class instruction.

Once again, there is a concern about the developmental level of students. A justifiable inference from the literature is that young low-ability students have a better chance of succeeding academically in structured, well-focused cooperative learning situations, with high levels of reward and/or task interdependence, and high levels of individual accountability. For older low-ability students, the situation is more complex. The ideal cooperative technique would be one that emphasizes both basic skills and concept development.

Conclusions and Implications

One conclusion is easily drawn from this review: The research literature on within-class instructional grouping is not as complete as we would like to guide policy and practice. Cautiously, we will summarize the implications of the extant literature, keeping in mind that policy makers and practitioners are searching for ways to better implement Chapter 1. Carter (1984) has observed that since Chapter 1 is administered as a poverty-based program at the school level, many low-achieving, disadvantaged students are unserved by the program. He also provides evidence that many moderately disadvantaged, underachieving students benefited the most from Chapter 1 services in the past. Grouping students for instruction with Chapter 1 classes may be a useful educational practice to stimulate the learning of low-achieving, disadvantaged students. We suggest the following implications drawn from the research reviewed in this paper.

1. Teachers need to consider many factors when they assign students to instructional groups, but most importantly, individual students' needs and characteristics, such as their developmental level. This is particularly important in the early elementary years, since some research suggests that young low-ability students can fare well in academically structured, focused cooperative learning situations, with high levels of reward and/or task interdependence, and high levels of individual accountability.

2. Teachers should not be reluctant to reassign students to groups and even alter the groups themselves. Students change, and classrooms are in flux throughout the school year. Groups should be changed, added, deleted, as indicated. Most importantly, teachers should reassign students to different groups, if that is appropriate for the students.

3. Homogeneous ability grouping is detrimental to learning of students assigned to low groups, a consequence of the prevalent pullout practice in the way Title I has been implemented in classrooms.

4. Heterogeneous ability, all-student groups and some variants of cooperative learning may be effective in providing low- and high-achieving students opportunities to learn, since they allow students to become actively involved in the learning process.

5. Teachers should be knowledgeable about the variety of grouping practices and be able to use them in their classes when they believe that it would be helpful to students' learning. Although the use of some of these techniques may be costly and at first, difficult to implement, educational administrators should provide resources for these practices. In particular, teachers should be cognizant of both the intended and unintended consequences of using groups in their classrooms. Low-achieving students often do not have the same opportunities to interact in heterogeneous ability all student groups, unless the teacher monitors the group interaction and intervenes

so the distribution of opportunities to learn is equitable.

6. It may be desirable to teach students how to interact effectively in small groups so that when groups are used in classrooms, students learn both cognitive and social skills. For example, Peterson, Wilkinson, Spinelli, and Swing (1984), identified "task-master," who managed their time efficiently in order to complete the task, and they gave explanations, made procedural requests, provided answers to questions, and engaged in answer checking, which appeared to increase their own motivation to complete their work, with the eventual result of increasing their own achievement. Teaching these skills to students may help them to profit from instructional groups.

7. The quality of instruction provided by the teacher and the assistance provided by other students should be appropriate to the students' level and skills and should stimulate the learning of low achievers. Attaining equity for all students in classrooms is a difficult goal, since educational resources are limited. However, an appropriate use of instructional groups in classrooms is to provide more opportunities for low-achieving students to practice their skills and develop their knowledge than would be the case in a more traditional, whole-class format.

In conclusion, within-class grouping of students for instruction is neither the savior nor the culprit that some believe it to be. The concept refers to a variety of educational practices, some of which have been prevalent in American classrooms, and some of which must be regarded as experimental. Grouping may be used to increase achievement and address individual differences by providing differential instructional methods. Without further research, however, important questions about the consequences of grouping will remain unanswered.

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CURRICULUM AND INSTRUCTION: REACTIONS

by

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In reading these papers, I was constantly interrupted by vivid memories of my own introduction to alternative designs in compensatory education almost 20 years ago. My teachers were 25 eleven- to fourteen-year-old girls in an all Black junior high school in inner-city Cleveland. We were together every morning for thematically oriented instruction in English, social studies, math and science. Obviously the goals of this Title I program were not limited to subject matter learnings--self-image and positive attitudes about learning, school, community and others were of central concern. To paraphrase Brophy, my response was eclectic--at first often desperate, spontaneous and experimental and, then, more playful as the year progressed. Although few miracles happened and there are many things I wish I had done differently, for most of my seventh graders it was a good year--active involvement in school, academic progress, a sense of belonging, good times, pride in their accomplishments, no pregnancies, 28 consecutive days of 100 percent attendance and a positive relationship with a White teacher in a year marked by assassinations and racial riots. I do not know how much they gained over their entering second to fifth-grade achievement test scores--fortunately for all of us, that was not the measure of success then. They were convinced that they were the best of the six Title I classes--and so was I. I was stunned when I found out the last week of school that I had the bottom section. The power of positive expectations, now confirmed by research, made a lasting impression on me.

But my girls did more than confirm my faith in expectations--they taught me in the most powerful way that there are only "alternative designs" in teaching. Schooled in an affluent public school, a seven sister college, an ivy league graduate school, I entered teaching with certain idealistic conceptions on humane, progressive, academically rigorous education. Yet I found that the only way to hang on to my ideals meant to be open to "alternatives" which I had previously rejected--behavior modification, rote learning drills and even once succumbing to a very common practice in the school, paddling (Zumwalt, 1984). While I was being more playfully eclectic as I taught, the importance of alternate strategies literally hit home the day Robin finally learned to subtract two and three digit numbers. I had just begun to experiment with a new strategy to handle math because the individualized self-pacing materials were no longer engaging the students productively. In Brophy and Wilkinson's terms, I wanted to increase time-on-task and active teaching and learning. While I met with a small group, I had other students working in carefully matched pairs at the blackboard. The "teacher" student was to teach the student the computation skill I had identified for each student. They were excitedly working and I was enjoying my uninterrupted time with my small group when out of the corner of my eye, I saw Tillie hit Robin. Since Robin wasn't complaining I decided not to intervene. But after several more hits, I felt compelled to rescue Robin. When I asked Tillie why she was hitting Robin, she quickly responded, "That's the only way she's going to learn." And much to my amazement Robin did learn to subtract that day.

Now I'm sure this is not what the researchers had in mind when extolling the values of "corrective feedback" and I can assure you that I never adopted the technique nor would encourage anyone else to do so, but it has served as a vivid reminder to me through the years of the value of openness, flexibility and awareness of a range of approaches. Being initiated into teaching through compensatory education in Boston and Cleveland has definitely shaped my view of teaching as being deliberative--bringing to bear one's experience, intuition, values, understanding of particular learners, subject matter, context, pedagogical knowledge and skills in a fast-paced, continuous, complex problem solving and decision-making process about ends as well as means (Zumwalt, 1982).

As I read these five papers, I kept asking myself what meaning they might have for teachers who share this view of teaching and who are working with low-achieving students in compensatory education programs. After reviewing the "messages" of these papers, I will raise some curricular and instructional issues particularly salient for low-achieving students in compensatory programs suggested by these papers.

The Messages

Because of the assignment of topics for the conference, three authors (Calfee, Romberg, Adams) focus on curricular issues and two authors (Brophy, Wilkinson) focus on instructional issues. Taking these divisions for the time being, what do they suggest?

Curriculum Papers

Calfee, in addressing reading, and Romberg, in addressing mathematics, ask us to question our goals in these areas, as well as the way instructional strategies have particularly distorted what children are learning in compensatory education programs about these two subjects. Adams asks us to give more than lip service to our long-held goals of teaching students to think by establishing a separate course which teaches thinking directly.

Calfee asks us to rethink the goals of our reading instruction. It is all too easy to let our goals become the completion of a set of curricular materials and more than expected gain on standardized reading achievement tests. Instead, he proposes that we aim for the "literate person"--a person who can competently "send" (speak, write) as well as "receive" (listen, read). Like the authors of Becoming a Nation of Readers (Anderson, Heibert, Scott, & Wilkinson, 1985), who define reading as "a process of constructing meaning from written texts," Calfee believes his goal demands more attention to comprehension and to integrating the reading, writing and oral language aspects of literacy. While believing his goal is not presently being achieved even in the most advantaged settings, he asserts that the present methods for promoting literacy are "virtually pathological for the child from a lower-class home" (p. IV-43). The negative impact of ability grouping, pullout programs and use of paraprofessionals to remediate reading--all practices found in Chapter 1 programs-are compounded by remedial reading programs which take the learner through a piecemeal sequence of unconnected objectives with heavy reliance on workbooks, an emphasis on decoding to the neglect of comprehension, and an insistence on mastery before moving on. Instead he feels "all youngsters should be treated as if they can handle the job" (p. IV-49) and be provided a coherent, integrated approach to literacy. Given his goals, he believes compensatory education should focus on the well-being of the school as an educational organization rather than target the individual.

Actually Romberg's message about math is strikingly similar to Calfee's about reading. For too many children, he asserts, math has become merely a sequential mastery of one concept and skill after another, the curriculum has become defined by the fragmented, skills approach of workbooks and judged by narrowly constructed achievement tests. What is missing is the interconnectedness of ideas--the viewing of "math as a language and a science which orders the universe, a tool for representing situations, defining relationships, solving problems, and thinking" (p. IV-17). The emphasis of mathematics education should be on "creating knowledge rather than absorbing the history of other people's knowledge" (p. IV-19). The teacher should "provide the environment, act as mentor and get out of the way" (p. IV-20). Like Calfee, he believes his goals are far from being achieved for most students, and feels that most compensatory programs tend to "widen the gap of knowledge about math between those who are affluent in our society and those who are not" (p. IV-14). Programs, be they compensatory or not, which focus on mastery of procedural skills, do not give low-income children "the opportunity to do important mathematics" (p.IV-11). For him this differential opportunity then is not limited to low-achieving Chapter 1 students but to all low-income students

(Anyon, 1981; Popkewitz, Tabachnick, & Wehlage, 1982). Having answered the "what should be taught question," he ends raising the political question of "who gets taught" and who should make this decision (p. IV-20). Right now the current resolution of this enduring curriculum question favors the perpetuation of the present unequal distribution of mathematical knowledge--Chapter 1 programs while appearing to remediate are, in the process of doing so, widening the knowledge gap.

Adams, in her paper on teaching thinking, literally appears to pull us in the opposite direction of Calfee and Romberg. She argues for the inclusion of a course on thinking separate from the regular curriculum. She believes the direct teaching of thinking skills to Chapter 1 students "promises to be the best institutionalizable means of developing the competencies and attitudes they need to make the most of their schooling and their lives" (p. IV-115). She offers some useful criteria (transfer, individual differences, and useability) to judge the appropriateness of thinking programs and suggests that any one of the six reviewed might be "a very good candidate for implementation...depending on a classroom's particular needs and constraints" (p. IV-114). Yet none of the programs offers the needed balance of the macrological and micrological approaches nor is as easily usable with low-achieving students as the Odyssey curriculum newly developed by her firm. The Odyssey curriculum, tested in the barrios of Venezuela, is a "content-rich, process-centered design in which the macrological is systematically built upon the micrological" (p. IV-106). It uses the Socratic method and structured discovery. She argues that such an explicitly and methodically developed separate course has greater transfer, is more easily implemented, and is more useful for low-achieving students. Such an approach to thinking is obviously suited to a Chapter 1 pullout program taught by someone other than the classroom teacher-and, in many ways, seems similar to the current skills-oriented remediation approach used in math and reading. (In an informal conversation at the Conference, however, Adams remarked that the course has been most effective when taught by the classroom teacher.)

In terms of curriculum, these papers taken together are essentially telling us that the way reading and math is being handled in most Chapter 1 programs is ultimately dysfunctional for the children we are trying to help, but that the addition of a separate thinking skills program would be a welcomed addition. Calfee and Romberg's positions pull us back to more holistic, integrated classroom approaches in reading and math while Adams wants thinking pulled out of the regular classroom curriculum as a separate, explicitly sequentially developed course, assumedly either in a pullout program or as a separate course in the classroom.

Instructional Papers

Before considering questions and issues raised by these three papers, let us first turn to the two papers in which the authors were asked to focus on instructional issues. Unlike the three papers on curriculum which tell us what we are doing (reading, math) or are not doing (thinking) is essentially wrong-headed, Brophy and Wilkinson indicate that the research designed to develop generic principles of instruction does not yield specific prescriptions for teaching but rather has generated a set of concepts which are useful in deliberating about teaching decisions in particular contexts.

In characteristic comprehensiveness, Brophy reviews the recent literature on teaching for patterns that cut across several lines of research. Given usual class size and heterogeneity, he argues that the predominant pattern of instruction (traditional whole-class instruction/recitation/seat work) is the compromise chosen by the majority of teachers as they trade off "classroom management benefits against costs in instructional quality and efficiency" (p. IV-123). From the perspective of traditional instruction, he concludes that effectiveness, as defined by gains in standardized achievement tests, is influenced by the amount of time students are engaged in appropriate academic activity. Student engagement is maximized by "active teaching," where the teacher carries the content personally rather than depends on curricular material, relates material to what students already know, monitors their performance, and provides corrective feedback through recitation, drill, practice, and application activities. But Brophy notes that grade level, subject matter, the nature and objectives of the activities, and student characteristics may modify this definition of effective teaching. And depending on class size, available aides, available material and assignments for differentiated instruction, teacher planning and management skills, any combination of whole-group, small-group, or individual instruction might work. Noting that few teachers have the resources and class size to successfully offer individual instruction, he views the traditional whole-class/recitation/seat-work pattern as an understandable compromise.

Instead of the traditional, whole-class pattern Brophy sees as functional for most teachers, Wilkinson, in specifically addressing the issue of grouping within the classroom, encourages teachers to consider some variant of cooperative learning groups. She believes the research shows benefit for some students in small, heterogeneous ability groups. Such groups increase the low-achieving student's involvement in task, active learning, and opportunity for providing and receiving conceptual-sequencing explanations. In contrasts to her guarded recommendation of heterogeneous, cooperative learning groups is her indictment of homogeneous ability grouping as "detrimental to learning for students assigned to low groups" (p. IV-186). While viewing the use of flexible instructional groups and cooperative learning, in particular, as promising, Wilkinson believes many important questions about the consequences of grouping remain unanswered.

Issues and Questions

As I read this set of papers I view them as rich sources for deliberation about teaching Chapter 1 students because of the issues they raise directly and indirectly. While Brophy and Wilkinson are appropriately and explicitly cautious about drawing policy prescriptions from their reviews, their clear presentation of the literature makes the issues for deliberation in a particular context quite clear. If you accept Adams' argument, her recommendation to add a separate, packaged curriculum to teach thinking to Chapter 1 students appears to lead to the most straightforward prescription. Yet she reminds us, despite having a favorite, that "depending on a classroom's particular needs and constraints" any of the seven programs she reviewed or others might be "a very good candidate for implementation" (p. IV-114). Modifying the prescription even further are the papers by Calfee and Romberg. In their rejection of similar approaches to reading and mathematics, they cast a shadow on unthinking acceptance of such an approach to teaching thinking. Their papers lead us to question the dominant approach to reading and mathematics, not only for Chapter 1 students, but for all our students. As a set, these papers remind us of the complexity of the task which precludes identification of a curriculum and a set of instructional behaviors which will ensure success for Chapter 1 students. They do, however, provide a wealth of information and perspectives to help us reflect upon, assess and, when appropriate, change our present approaches.

As a starter, let me indicate some of the types of issues and questions these papers raise for consideration. Using a combination of Schwab (1973) and Tyler (1949), a set of commonplaces can be generated to help us focus on the curricular issues raised by these papers. These include: goals, the learners, subject matter, the teacher, milieu. The issues defy neat categorization into commonplaces, but the commonplaces do provide us an analytic tool to help keep our deliberations comprehensive.

Goals

Goals for Chapter 1 students are clearly indicated by the three curriculum writers: developing the literate person (Calfee); creating opportunities for knowing and doing mathematics rather than knowing about mathematics (Romberg); and enhancing students' abilities to face new challenges and to attack novel problems confidently, rationally, and productively (Adams). These goals stand in sharp contrast to the goals given one of my graduate students as she started teaching in a school serving low-income students:

> Literacy Goal: To ensure that our students enter the "minimal" average range of students achieving on or above grade level in reading (50 percent on grade level).
>
> Mathematics Goals: To increase student achievement in mathematics on city-wide standardized tests to the 50 percent on-grade level.

From my experience, goals for Chapter 1 students are often stated in terms similar to these school-wide objectives.

Are Calfee, Romberg and Adams just dreamers unaware of the importance of achievement test scores to success in our society? While Adams argues that the transfer of thinking skills should be evident as gains on achievement test scores, Calfee's conception of literacy and Romberg's conception of mathematics lead to the questioning of achievement test scores as proxies for educational goals for Chapter 1 students. Given the present public infatuation with test scores, the relationship of Calfee's and Romberg's goals to achievement on reading and math tests needs further elaboration if their arguments for more holistic, integrative and constructive approaches are to receive a hearing.

Interestingly, in dealing with instructional issues, Brophy raises explicitly the "what should be taught" question. "Policy makers," he says, "need to identify and prioritize educational outcomes they value" (p. IV-124). Most of the process-outcome research he reviews, and much of that reviewed by Wilkinson, has defined outcome/benefit in terms of achievement test scores. Both Brophy and Wilkinson are aware that the present research has not considered the full range of outcomes to be achieved, as well as the unintended consequences of a particular practice. Hence, while valuable, present research which relies heavily on achievement tests does have a tendency to reinforce the idea that achievement test scores should be the goal of education. Brophy reminds us that "policy makers must set priorities amongst the goals on the basis of values, not science" (p. IV-162). The question remains whether policy makers' visions of educational goals can be extended beyond achievement test scores.

While one might argue that test scores are generally seen as minimum goals rather than the only goals of education, for students, such as those being served by Chapter 1 programs, they often become the goals because improvement on tests is the primary way one may leave Chapter 1 and the primary way the program is evaluated. In looking at what Title I students were not getting as instruction in math and reading remediation increased, Carter (1984) concludes that "it is not clear that Title I students enjoyed a net gain in total instruction" (p. IV-5). The narrowing of goals in Chapter 1 programs and in lowachieving schools to test score improvement while achieving and more economically privileged students are exposed to more expansive goals raises the question of equity. Is it necessary and desirable to focus students' education primarily on minimal test score achievement before other goals are considered?

Learners

Having been schooled during the heyday of Title I programs, perhaps the most striking feature of this set of papers for me was the lack of attention to the characteristics of low-achieving, low-income students and the ensuing consequences for curriculum and instruction. At first I wondered whether the authors were aware of the past literature describing the intellectual, social, emotional, linguistic characteristics of low-income, low-achieving, often minority, students. Upon later readings, I realized that they had either conscientiously rejected the current use of such distinctions as being detrimental (Calfee, Romberg) or unimportant (Brophy) or had considered such distinctions as an integral part of their argument without the elaborated descriptions necessary 20 years ago (Adams, Wilkinson).

Rejecting "the kid's the fault" line of reasoning, Calfee places blame on prevailing school practices which are "pathological for the child from the lower-class home" (p. IV-43). Mistakenly believing that the students have few relevant experiences and cannot think, schools offer these students a detailed, piecemeal sequence of unconnected objectives and force repetitive practice aimed at mastery. These practices accentuate the differences between lower- and middle-class children and between high achievers and low achievers, and preclude development of the literate person which Calfee feels is an appropriate goal for all students. He urges that instead of differentiating the curriculum, we "treat all youngsters as if they can handle the job" (p. IV-49) and provide coherent, more holistic programs which integrate the reading, writing and language aspects of literacy.

Likewise Romberg is critical of compensatory math programs which appear to ignore any assessment of students' common misconceptions and particular deficiencies of low-income, low-achieving students beyond rate of learning. Instead math for them becomes the specific procedural skills of arithmetic which they will confront on standardized achievement tests. Compensatory programs focused on remediating such skills, Romberg believes, widen the gap between the advantaged and disadvantaged in our society. Like Calfee, Romberg believes his goal of having students know and do important mathematics is an appropriate goal for all students. Since he believes the starting point for all students is the structure of mathematical knowledge already created by the student, all students can "constantly extend the structure of mathematics they know by making, testing and validating conjectures which may originate as postulates of conscious thought or be derived intuitively" (p. IV-18). But since students bring with them individual differences, whether all students get taught mathematics and how they get taught it, which also influences the outcomes is a serious, political question according to Romberg. He describes how various interest groups claim they have the knowledge of cultural determinants, social and personal characteristics, and the ideology of individualism. Whether schools could adapt to individual differences, compensate for differences, offer different curriculum for different students or leave the option to students are the questions Romberg views as central for debate and discussion. Ignoring deliberation of this important curriculum issue of "who gets taught what and how" throws us back into the present unacceptable condition of compensatory math programs which increase initial differences between achieving and low-achieving students by relegating the latter to endless attempts to master specific procedural skills of arithmetic. So while Romberg, like Calfee, rejects the current approaches to Chapter 1 and believes his more expansive goal is appropriate for all students, he also recognizes that individual differences go beyond expectations cited by Calfee and demand some critical curricular decisions about who gets taught what and how.

Insensitivity to individual differences, Adams believes, is especially critical when dealing with Chapter 1 students whose "knowledge, skills and interests tend to be unpredictable both within and across individuals" (p. IV-99). Students' minimal reading, writing, and specialized knowledge favors process- oriented programs and puts such macrological approaches like Philosophy for Children out of reach for low-achieving students. Abstract exercises, typical of micrological approaches, "which are relatively meaningless by definition and remove conceptual distraction potentiated by content-rich exercises" (p. IV-100) are also appealing. But Adams recognizes the problem of such micro approaches. Although seemingly matching learner characteristics, they deny the learner access to the knowledge necessary for social mobility and minimize the potential for transfer of thinking skills to other contexts. The Odyssey program developed by her firm has sought to balance micrological and macrological approaches in an attempt to deal directly with the dilemma posed by both Calfee and Romberg when attention to apparent learner differences create further learner differences.

Brophy takes another stand on individual differences by claiming that except for "the modest literature of specific learning disabilities," there is little evidence for the need to consider "qualitatively different forms of instruction for students who differ in aptitude, achievement level, socioeconomic status, ethnicity or learning style" (p. IV-122). In essence, he interprets the literature as saying low SES students and students in special settings just need more of what other students need: more control and structuring from the teachers, more active instruction and feedback, more redundancy, smaller steps with higher success rate, more encouragement, more personalized and supportive interaction. Thus, he advocates more review, drill, and practice, more low-level questions, less coverage and more mastery for Chapter 1 students. Calfee and Romberg would obviously disagree that this approach is just quantitatively different--they believe it has lead to qualitatively different opportunities and outcomes for compensatory education students. And they would probably suggest that Brophy's findings is not surprising given his reliance on process-outcome studies which he admits look at the narrow range of outcomes defined by achievement tests.

Actually, there is one characteristic of low-achieving students which Brophy thinks may need special attention. Chapter 1 students are "most likely to need heavy doses of strategy training" (p. IV-150). Unlike able students, these students tend not to "develop well functioning cognitive strategies and metacognitive awareness and monitoring skills" (p. IV-150) on their own. On this point, he would get support from Adams.

And when there are high concentrations of students with serious reading difficulties or behavior problems, Brophy questions the feasibility of implementing the cooperative learning groups which seem a promising approach to Wilkinson. Not only may the students be unprepared to handle the increased responsibility and autonomy, but the groups no longer have the heterogeneous range of students central to such an approach.

Wilkinson, however, believes that heterogeneous cooperative learning groups may give the low-achieving student what he needs: more regulation by others to guide and monitor progress through steps of the assignment, more procedural-conceptual sequencing explanations, and greater participation in task-related activity. While they might have to be taught directly how to interact effectively in small groups, she feels such an approach is a better match of their needs than whole group instruction--an argument Brophy would question--and certainly better than homogeneous grouping which may match learner needs but has detrimental effects for students assigned to the low groups because of differences in instructional processes, the learning environment, and how students and teachers interact.

As a set, these papers not only present different views on accommodating learner characteristics in Chapter 1 programs, but raise a critical dilemma. Not to be responsive to individual differences in designing curriculum is seen as irresponsible; yet a program which offers a modified curriculum seemingly to meet the differentiated needs of learners may create even greater differences between learners in their opportunity to learn valued knowledge. While raising expectations, exposing students to a thinking program like Odyssey, employing cooperative learning groups, giving students cognitive strategy training might alleviate some learner differences, I suspect substantial differences will remain and Romberg's questions about "who gets taught what and how" become the critical ones.

Subject Matter

Most attention to subject matter in these papers is understandably found in the Calfee, Romberg and Adams papers, but the two instructional papers are relevant in helping illuminate the problems in ignoring the intertwining of curriculum and instructional issues in the teaching process (Zumwalt, 1986).

Calfee, Romberg, and Adams view the current conceptions of reading, mathematics, and thinking as inappropriate for all students, but particularly handicapping for Chapter 1 students. Calfee and Romberg share holistic, integrated, constructive notions of literacy and mathematics. They reject current conceptions of school subjects which consist of discrete, unconnected skills and concepts to be mastered sequentially in piecemeal fashion with heavy reliance on workbooks/ditto sheets entailing repetitive practice in decoding and in basic arithmetic procedures to the neglect of comprehension and creating mathematical knowledge. While very sympathetic to both Calfee's and Romberg's views of education and their subjects, my own experience makes it much easier to envision the approach to literacy even though I find Calfee's statement about a more straightforward curriculum with tasks rendered in more explicit fashion and adequate instruction in the tasks somewhat enigmatic. Especially for those of us not schooled adequately in mathematics, Romberg needs to find a way to mimic the "generative" characteristics of the approach he rejects or at least provide us with some rich descriptions of what knowing and doing math should look like as a school subject. Otherwise, his approach has no chance against the dominant view expressed by a district director of instruction in last week's New York Times. In explaining why his primary students are now spending all their time on "basic" skills rather than probability, statistics and more esoteric topics, he succinctly comments, "We tried to cut out all the extra junk" (Fiske, 1986).

In contrast to Romberg and Calfee, Adams asks us to take the teaching of thinking skills in the opposite direction because she views thinking as a school subject to consist of a set of generic skills. These skills are most effectively conceived explicitly and methodically "over as diverse a set of content-specific and intellectually complex extensions as we could squeeze in" (p. IV-110). She believes that the only "rational path" to developing "critical but open-minded, flexible, and nonegocentric thinking skills of the dialectic" is through the direct and methodical teaching of identified critical and analytic skills. This conception of subject matter (and learning) sounds strikingly similar to that of reading and mathematics which Calfee and Romberg reject as being inappropriate. One wonders whether the "thinking specialists" are just on a different side of the swinging pendulum than the reading and math specialists, whether "thinking" as a school subject is uniquely different from reading and math, or whether "thinking" as a relatively new school subject has to go through the explicit and methodical definition of skills and subskills as did reading and math, primarily to give adults some understanding and control over what is to be taught. While keeping an open-mind on the potential uses of separate thinking skills curriculum but being sympathetic to Romberg and Calfee's views of the destruction of reading and math as school subjects, I find that Adams does not convince me that a contrasting view of the developing of thinking should be rejected. This view more in line with Calfee and Romberg's constructivist orientation, views teacher mediation, not prescribed curriculum sequences, as the critical variable in fostering student thought (Grennon, 1984).

While Brophy and Wilkinson, in focusing on instructional issues do not explicitly take sides on the nature of school subject matter, when drawing conclusions about generic principles of teaching from process-outcome research they are admittedly accepting the approach to subject matter conceptualized in standardized achievement tests--an approach rejected by Calfee and Romberg in reading and math and accepted by Adams in teaching thinking. Brophy appropriately warns that his conclusions drawn from process-outcome research only apply "to instruction in any body of knowledge or set of skills that has been sufficiently well organized and analyzed so that it can be presented systematically and then practiced or applied during activities that call for student performance that can be evaluated for quality and (where incorrect or imperfect) given corrective feedback" (p. IV-164). While Adams feels the development of basic thinking skills fits such a description, Calfee and Romberg are disturbed that the inappropriate adoption of this instructional strategy has distorted school reading and mathematics programs, especially for Chapter 1 students.

Brophy is sensitive to the limitations of generic principles and the likelihood that "most of what is going to be discovered about relatively generalizable process-outcome relationships has already been discovered, and that the most important new contributions to the process-outcome literature in the future will come from studies of instruction in particular grade levels that feature focused attention on the nature of the content or skills to be taught and on related subject matter-specific pedagogy" (p. IV-145). He ends his paper calling for comprehensive attention to both curricular and instructional issues which have been studied by separate groups of researchers and theorists. Such an approach is promising and might see Brophy extending his reasons for the recent failure of mastery learning in Chicago to include an inappropriate conception of literacy and might impress upon curriculum specialists the powerful influence of choice of instructional strategy on shaping school subjects. As Adams reminds us "the content of a curriculum is the medium of instruction" (p. IV-93) and as Wilkinson argues, the intended and unintended consequences of instructional practices, such as grouping, need to be considered as part of the learning outcomes.

For me this set of papers illustrate rather dramatically what happens when curriculum and instruction are treated as separate domains. Such dualism has led to our current situation where an instructional strategy appropriate to certain kinds of content and objectives usually measured on standardized achievement tests has come to define the curriculum for too many students. As the exemplary teachers responding to the Instructional Dimension Study noted, the very act of teaching does or should involve the making of curriculum and instructional decisions (Zumwalt, 1986).

Teachers

On the whole, the authors view teachers as having the responsibility and freedom to make decisions about teaching. They do differ, however, in the degree to which they envision teachers taking such active roles.

Although he does not elaborate his position, Calfee reminds us that "the determination of the actual curriculum for a student is ultimately in the hands of the teacher" (p. IV-36) even in the most prescribed, "teacher-proof" curriculum.

Wilkinson, while advocating student-led groups, often refers to the teacher actively intervening, instructing, reassigning, and altering groups. She urges that teachers become knowledgeable about a variety of grouping practices so that they will "be able to use them in their classes when they believe that it would be helpful to students' learning" (p. IV-194). And Brophy, who views the teacher as actively carrying the content to the students rather than relying on materials, describes the many contextual variables that must be considered before "applying" research findings. The very nature of teaching precludes prescriptions which bypass teacher judgment.

While Adams believes teachers should be encouraged to modify and adapt curricular material, she asserts that "one should not expect teachers to produce the bulk of their instructional materials anymore than one expects medical doctors to invent medicines, actors to direct their own movies, or Presidents to write their own speeches from scratch" (p. IV-104). Some may, but curricula must be "usable and effective in the hands of whichever teachers draw the straw." Hence, Odyssey is a completely scripted program--not to follow verbatim but rather "to provide a detailed and highly imaginable model of the sequence of interactive dialogue and activities through which the embedded lesson plans might be achieved" (p. IV-111). They hope "even the least confident teacher will feel invited to build" (p. IV-112) because such extensions increase the impact of the curriculum. In essence, the curriculum hedges its bets on teachers' ability and willingness to view their role as an active decision maker and constructor of curriculum. Not having examined Odyssey, I am not sure whether this is another "teacher proof" curriculum in disguise or a genuine attempt to be sensitive to teacher time and provide the structure and resources necessary to enable teachers to make more efficient and effective decisions about teaching a "subject" in which few have had explicit preparation.

Clearly Romberg goes the furthest in elaborating a new role for teachers who he feels have been "deskilled" by detailed individualized programs or highly structured programs which take important teaching decisions away from the teacher. "Taken to an extreme, the teacher becomes only a conduit in a system, covering the pages of a program without thinking or consideration" (p. IV-14). He describes a new role for teachers which complements the work of the student. If the emphasis is on the student "creating knowledge rather than absorbing the history of other people's knowledge, the work of the teacher is to support, promote, encourage and in every way facilitate the creation of knowledge by students" (p. IV-20). The teacher "provides the environment, acts as a mentor and gets out of the way" (p. IV-19). Clearly, Romberg is speaking of a different role than teachers play in most American classrooms and a different role than explicitly described by any of the other authors.

Regardless of which vision of the teacher one accepts, realistically or ideally, all the visions described here suggest an investment in professional development rather than relying on prepackaged curriculum materials (Amarel, 1978). And all suggest a need to pay serious attention to attracting and retaining able people in teaching who are well-educated themselves and who can exercise the judgment and flexibility needed to teach well.

Milieu

In considering the milieu, one could discuss any of the contexts which need consideration in developing curriculum: the classroom, school, school system, neighborhood, city/town/state/nation, or the more amorphous concept of society. For the purposes of this paper let me illustrate by focusing on "societal needs." Most of the authors explicitly acknowledge that the issues they are discussing deal with the sorting function of schools and have implications for social stratification.

Wilkinson touches upon these issues in rejecting homogeneous ability grouping which perpetuates the low status of low-achieving students and in warning of the need for the teacher to intervene in heterogeneous groups so the "nature of the interactional processes" does not reinforce the status quo. Adams touches upon these issues when she rejects the micrological approaches because they deny the low-achieving child access to the knowledge and values necessary to move into and up in our social structure.

Brophy throws back the policy question, explaining that deciding priorities amongst goals is essentially a question of value, not a question of science. Romberg casts the social-political question as not just one of determining what goals are valued, but who gets access to what knowledge and who should make these decisions. He believes ignoring this question has led to the present situation where the gap between advantaged and disadvantaged is not only perpetuated but is widening.

A partial answer to Romberg's question is found in Calfee's paper. He asserts that demographic trends preclude continuation of a selectional system of education—our society does not have enough "easy to educate" youngsters to handle work-force needs. Our society, he maintains, can no longer afford "failure." He sees the convergence of equalitarian concerns (access to quality education not being dependent on student background) and workforce concerns (high number of literate graduates) as being a hopeful sign that society will commit the resources needed to improve education. Whether such arguments are convincing enough to mobilize forces beyond the rhetoric of reform remains to be seen.

Conclusion

After searching for "some instructional programs that were particularly effective with disadvantaged students" and finding none, Carter (1984) concludes:

> There is a complex interaction between the curriculum, the characteristics of teachers and administrators, the social and economic characteristics of the school, and the background of the students. This leads to the unfortunate situation that in attempting to improve a large number of disadvantaged students, one must improve a large number of educationally relevant factors and there is no simple solution to the problem of improving the education of disadvantaged students. (p. 12)

There is no simple solution found in this set of papers either. Class 7B in Cleveland, Ohio, led me to the same conclusion back in 1968. But they also taught me the value of not giving up--that positive expectations, struggling and experimenting do have their rewards--that teachers can make a difference in the lives of children. There is much in these papers for thoughtful teachers to deliberate about as they actively shape a coherent and stimulating learning environment for their students (Zimilies, 1978).

But teachers, legally and ideationally, are bound by the systems and times in which they themselves learned and now work. In the name of excellence and equity, we have become a test-driven system--tests define the curriculum, indicate success, focus our research, and have become a measure of that which is valued in individuals and schools. The issues raised by this set of papers are the kind that must be addressed by policy makers and other educators, as well as teachers, because they permeate our system, shaping in substantial ways what is happening in classrooms.

Among the critical questions raised by these papers are the following:

- Is it necessary and desirable to focus students' work on achieving minimal test scores in reading and math to the exclusion of other educational goals?

- How can we be responsive to individual differences without widening the differences between individuals in their opportunity to learn valued knowledge?

- How can we break away from the dualistic thinking about curriculum and instruction which has led to the domination of test- driven instructional strategies as the solution to the educational problems of Chapter 1 students?

- How do we facilitate a deliberative approach to teaching, increase the wisdom of teachers' judgments and attract and keep able, well-educated people in teaching?

- How can the concerns of equity and excellence work together, rather than in opposition, to mobilize resources to deal with the complex, enduring problems of providing quality education for all?

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CURRICULUM AND INSTRUCTION: REACTIONS

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CURRICULUM AND INSTRUCTION: REACTIONS

The Executive Summary of the National Institute of Education Compensatory Education Study (1978) viewed compensatory education as:

> one of the nation's most important efforts to equalize educational opportunity. The concept stems from the recognition that children from disadvantaged backgrounds frequently do not enjoy the same educational benefits as their peers. Many attend school districts that have low overall revenues or high concentrations of disadvantaged families. . . . Compensatory education is intended to ease those problems by providing disadvantaged children with additional services to help them complete their education on more equal terms. (p. 1)

Carter (1984) has observed that: "There is no simple explanation or description of compensatory education (CE); it is an amalgam of many different programs, practices, and services" (p. 5). Chapter 1, as did Title I earlier, encompasses thousands of different programs, intervention strategies, and other activities. The more than 30,000 Title I projects across the nation, for example, reflect various goals and diverse treatments which were not readily converted into overarching goals or successful program models.

Compensatory education can be characterized or catalogued in a variety of ways, such as:

1. By target population (e.g., preschool, elementary, secondary, tertiary, adult, etc.)

2. By nature of treatment (e.g., remedial, developmental, enrichment, therapeutic, etc.)

3. By locus of activities (e.g., school, family, community, workplace, non-school agency, etc.)

4. By nature of services (e.g., instructional counseling, health, community development, etc.)

5. By intent of intervention (e.g., system reform, reversing underachievement patterns, integration/desegregation, closing the achievement gap, redistributing power, etc.)

6. By focus of diagnostic/prescriptive activities (e.g., learners, teachers, other professionals, the school system, the community, etc.)

7. By source of funding or legislation (e.g., Federal, state, local, foundation, corporate, etc.)

These catalog sets are not mutually exclusive, of course, and most programs and projects fit into more than one set. Some compensatory education efforts have limited goals while others have goals which are more global and comprehensive. Most efforts are additive in the sense that they are tagged on to existing programs rather than designed to effect fundamental changes.

The analysis of the various instructional and supporting services provided the almost 5 million pupils in Chapter 1 programs in 1983-84 showed the following distributions: (a) instructional-- reading (75 percent), mathematics (46 percent), language arts (22 percent), limited English (12 percent), other instructional areas (9 percent), and vocational (1 percent); (b) supporting--health and nutrition (15 percent), attendance and guidance (17 percent), other supporting (7 percent), and transportation (5 percent). As has been the case since passage of Title I ESEA of 1965, the majority of students are still involved in some type of reading and mathematics compensatory education programs. While an evaluation component is required for all proposals, as Mullins and Summers (1983) have pointed out: "The evaluation literature is so vast and its results so varied that virtually any hypothesis can be supported by a number of studies" (p. 339).

Implicit or explicit in all compensatory education programs are hypotheses or theoretical bases for the interventions or treatments designed. For instance, Levin (1985) has pointed out:

> All student populations include substantial individual variations in educational performance. However, by virtue of the accident of birth, some groups of students are likely to experience only the most limited educational progress in the present school system. Persons from non- White, Hispanic and immigrant families, and from households where parents have low income and little education, tend to complete fewer years of schooling, are more likely to drop out of high school and show lower test scores in virtually all subjects than their more advantaged peers. (p. 3)

Implicit in Levin's statement is the concept that there are deficiencies in the educational environment provided by the low-income and racial or ethnic minority families which affects their cognitive and linguistic development for which schools must compensate and for which schools must alter their usual programs and instructional strategies. For two decades, there has been controversy about the etiology of educational disadvantage. The poor scholastic performance of the population for which compensatory education is intended has been so amply documented that few challenge the accuracy of such reports. The past two decades have witnessed a considerable number of research and studies as well as the initiation of a vast array of programs and projects.

Gordon (1970) noted that most of the research can be divided into two broad classifications--one encompassing studies of the performance characteristics of disadvantaged groups and the other containing descriptions and superficial assessments of programs presumably designed to reverse the poor academic achievement patterns of the disadvantaged. Much of the research, Gordon asserts, tends to focus on "deficits" or "differences" of disadvantaged from more advantaged populations with such deviations "used to account for the observed dysfunctions in education performance among members" of the former group (pp. 1-2).

As I wrote some time ago (Passow, 1971) but believe is still applicable:

> There is a rich and growing body of literature on cognitive and affective development differences among various racial, ethnic, and socioeconomic groups; on family structure, life styles, and child-rearing patterns as these affect educational processes; on language development and linguistic differences; and on other behavioral characteristics of individuals and groups. While many studies focus on social and cultural factors affecting educational achievement, there is increasing attention to the health of the disadvantaged child as a contributing factor to scholastic failure....Social class and the socialization processes have been widely studied with respect to behavioral correlates, especially of young children....A variety of studies have focused on the effects of segregation and the consequences of desegregation on minority group performance.... Research has also shed some light on the effects of organizational and grouping practices, teacher expectations, curricular options, instructional materials, and neighborhood setting, and similar factors on achievement of disadvantaged studies. (pp. 9-10)

Some of this research and experimentation has stimulated treatment programs and intervention strategies since most program proposals contain an implicit, if not explicit, basis for the intervention or treatment.

> For example, if experiential differentials and deprivations in infancy are perceived as accounting for minority group youngsters entering classrooms ill-prepared to cope with the demands of the school, then early childhood programs should be designed to compensate for such deficiencies. If language development impedes transition from concrete to abstract modes of thought, then programs should provide appropriate linguistic experiences that will nurture such growth. If child-rearing patterns and maternal teaching styles affect cognitive growth, then parent education should develop different skills and behaviors. But even research that does provide the kinds of analyses that contribute to building theory and understanding behavior often reports equivocal findings that open debate rather than provide guidelines for the practitioner. Consequently, there are several "theories" or explanations or models set forth to explain inferior scholastic attainment and intellectual functioning of poor children—none of which is completely satisfying. Nor is it likely that _a_ theory will emerge although theoretical models will provide better guidance for program-planners and decision-makers. However, the cafeteria-eclectic approach that presently prevails leaves much to be desired. (Passow, 1971, p. 10)

Despite these observations which were made 15 years ago and research efforts which have continued in the intervening years, one still finds prevalent at assumption that the disadvantaged are really no different from other students except that they do not perform as well academically as do their more advantaged peers. For example, the index to the _Handbook of Reading Research_ (Pearson, 1984) has no entry regarding "Disadvantaged," but does include one on "Minority populations, 99-102, 163." The first three pages simply criticize the experimental and correlational research on reading for minority children as being equivocal and uninformative and suggest an interactive ethnographic approach instead. The equivocal and uninformative experimental and correlational research on reading for minority children is never discussed nor reviewed. The second, single-page reference discusses the difficulties in constructing tests that were uninfluenced by differences in relevant prior knowledge such as racial speech patterns: "Minority groups tend to be disadvantaged economically and are less likely to secure exposure to a literate environment. Hence, diagnostically important differences in performance are likely to persist" (Johnston, 1984, p. 163).

The Handbook of Research in Early Childhood Education (Spodek, 1982) has nothing in its index which indicates any differences between advantaged and disadvantaged youngsters except a listing for "Head Start" with references scattered on 12 pages plus eight pages devoted to the goals of and evaluations of Head Start programs. Under an index listing for "Language acquisition and development," one finds scattered references which actually do deal with the disadvantaged such as bilingual development, linguistic variability, modeling and environmental feedback, second language, speech code, and syntax, all of which deal with aspects of the development of the disadvantaged. There is also an entry on ethnic-racial considerations in motor development in early childhood. The indexes of such encyclopedias as the Fifth Edition of the Encyclopedia of Educational Research (Metzel, 1982) and The International Encyclopedia of Education: Research and Studies (Husen & Postlethwaite) do not produce more than a few isolated one- or two-page citations except for the latter which does have an 8,000-word article on "Compensatory Education" which deals with the general concepts and programs but not specifically with curriculum and instruction.

Despite the absence or paucity of references in these handbooks and encyclopedias sampled, there does exist research regarding the linguistic, cognitive, affective, social, developmental, learning styles, and other characteristics of low-income, racial and ethnic minorities which support the belief that disadvantaged children and youth do exist, that they have unique and different needs which require programs and services which we label "compensatory education," and that they pose challenges to teachers and curriculum planners whose "normal" strategies and programs seem not to work. What prompts this overlong prologue to the critiques is the fact that, for the most part, these papers have not reviewed that literature but have chosen to review the general research related to the topic. As Brophy notes at the outset: "Most of this research was conducted in regular classroom settings rather than in special classes set up to deliver compensatory education" (p. IV-122). Similarly, Romberg points out that he has "not reviewed the detailed characteristics of compensatory programs for school mathematics during the past quarter century," although he believes such an analysis is needed but is beyond the scope of his paper (p. IV-5). For the most part, it is research in the general classroom setting, not compensatory education research, and research on children in general, not those who are considered disadvantaged (Chapter 1 students) which is reviewed in the papers and implications are drawn from that research for planners of compensatory education programs and services.

Brophy: "Research Linking Teacher Behavior to Achievement"

The Brophy paper reviews research on school and teacher effects on student achievement in regular classroom settings, arguing that there is little evidence supporting the need "for qualitatively different forms of instruction for students who differ in aptitude, achievement level, socioeconomic status, ethnicity, or learning style" and that "most findings concerning effective instruction of heterogeneous groups of students in regular classrooms will also apply to instruction of the same content to homogeneous groups of Chapter 1 students, whether in regular classrooms or in special groups" (p. IV-122). One might conclude at the outset that there is no need for compensatory education for Chapter 1 students, although the paper does not draw such a conclusion as one reads on.

Brophy concentrates the review on "the literature on instruction (how to teach) but not on the literature on curriculum (what to teach)" and on research dealing with "general principles of classroom teaching rather than principles unique to instruction in particular subject matter areas" (p. IV-123). This dichotomy between the how and the what is often made although there are those who argue that the interactions between the two are important and the separation limits studies of effects.

In the section on school effects, Brophy makes a useful distinction between school effects and school effectiveness because "a school's effectiveness in eliciting student achievement gain cannot be equated with the school's quality," a broader concept encompassing both achievement and affective outcomes "such as promoting students' individual confidence and motivation as learners and their collective development of prosocial attitudes and cooperative behavior" (p. IV-124). Critics of the effective schools literature fault the studies because the outcomes are too narrowly conceived (usually only gains in reading and mathematics are considered) and the affective outcomes are ignored. There are compensatory education programs whose prime focus is on developing learner self-esteem and other affective behaviors as the basis for promoting academic achievement. (See, for example, Faintini & Weinstein, 1968.)

The effective schools research has been done mainly in inner-city schools with concentrations of Chapter 1 students, schools identified as "effective" essentially because the academic achievement gains were higher than would be expected. They are schools, Brophy points out, which have established "orderly, learning-oriented" environments and are schools that "place a high priority on [academic achievement] and follow-up by adapting high but realistic expectations, coordinated instructional efforts, and periodic assessment of progress" (p. IV-125). The implications of these findings are that the poor academic performance of Chapter 1 and other underachieving students is caused by the school and the school staff who need to change. Brophy notes that the "research on school effects is relatively silent about how teachers can accomplish this . . . but research on teacher effects" is more helpful (p. IV-125).

The review of research on "teacher effects" which relates teacher behavior to student outcomes reports both the quantitative and qualitative findings, most of the studies having been done in the past 15 years. Brophy observes that "the most basic and consistently replicated findings link students' achievement gains to their opportunity to learn the material, and in particular to the degree to which their teachers carry the content to them personally through active instruction and direct supervision of their learning efforts" (p. IV-126). Several early studies of inner-city classrooms found that disadvantaged students received far less instruction than their more advantaged peers because a good deal of teacher time was devoted to classroom behavior problems and to other management problems which reduced instruction time. Brophy suggests that if teachers are businesslike and task-oriented, they allocate most classroom time to activities with academic objectives rather than personal adjustment or group dynamics objectives. Some researchers such as Boocock (1972) believe that "what children who fail to 'make' it in school lack is role-playing skill, not the desire to succeed, and because they do not know how to play the role of student, they are less likely to do the things that will lead to success" (p. IV-126). Boocock suggests that:

> since low-SES [socioeconomic status] children are most likely to be subject to negative image and treatment, there is a need for strategies designed either to change teachers' perceptions of the kinds of students they now consider undesirable or to create new roles which can mediate between these children and the school system, perhaps helping them to change symbolic things about their appearance or behavior which will lead teachers to view and treat them differently. (p. 127)

In commenting on the quantitative findings, Brophy identifies four classes of teachers who are less likely to be successful in eliciting student achievement gains. One class consists of teachers who are "burned out." Since proportionately teachers in Chapter 1 schools are more likely to be burned out than teachers in schools with fewer Chapter 1 students, how to prevent or alleviate teacher burnout represents a significant staff development problem. Are the lack of academic achievement and disruptive behaviors contributing factors to teacher burnout or does teacher burnout contribute to low achievement and management problems?

A second class consists of teachers who place higher priority on affective or social outcomes than on achievement outcomes. Here, staff development would probably focus on orienting such teachers to emphasize social and affective outcomes as well as achievement outcomes, especially since both outcomes are of importance to Chapter 1 students for whom affective and social goals contribute to academic achievement as well.

The third class consists of teachers who lack classroom management skills and who could profit from training focused on enhancing those skills.

The fourth class consists of teachers who rely on individualized learning modules and other materials-based approaches to individualized instruction instead of carrying the content to students more directly through whole-class or small-group instruction. Brophy suggests that the problem is that responsibility for planning and managing is shifted from the teacher to the student and responsibility for carrying content is shifted to the materials. Individualized learning packages, he reports, seem to be more successful with special classrooms with small student-teacher ratios such as those often used with Chapter 1 students. He cites findings "that in special classes with small student-teacher ratios, teachers can move the students through curricula at a faster pace, can provide more tutorial and individualized instruction, and can assign more difficult work because they are able to continually monitor everyone's progress and provide immediate help when needed" (pp. IV-131). Thus, Brophy underscores the "role of active instruction from the teacher in producing student achievement gain," instruction which can be provided in tutorial form in special classes with small student-teacher ratios or in small groups within classrooms where appropriate management techniques have been designed. The implications for staff development seem clear.

In summarizing the qualitative findings concerning teachers' management of lessons, Brophy discusses research regarding three major instructional tasks—giving information, asking questions, and providing feedback. Here, one wishes that some of the studies which deal with these tasks in classrooms with Chapter 1 students or students from racial/ethnic minorities were included. For example, the report of the U.S. Commission on Civil Rights Mexican American Education Study (1971) found disparities in teacher-pupil interactions between Anglo and Mexican American pupils. An Anglo bias was found with respect to teacher praise and encouragement, acceptance and use of student ideas, positive teacher response, teacher questioning, noncriticizing talk by teacher, and all student speaking (pp. 21-42). The report concluded "that the schools of the Southwest are failing to involve Mexican American children as active participants in the classroom to the same extent as Anglo children. On most measures of verbal interaction between teacher and student, there are gross disparities in favor of Anglos" (p. 43). The report notes that Chicano children differ from Anglo children in language, culture, and economic background; that many enter school speaking little English or have serious problems using English; that the culture, values and family experiences differ; and "these discrepancies between the school and the home are one of the main causes of the lower participation and achievement levels of Chicano pupils in school" (p. 43).

Brophy's review of the qualitative findings regarding teacher behaviors in enhancing student achievement is thorough and informative. One suspects from research such as that reported by the Mexican American Education Study that studies in Chapter 1 classrooms and schools would provide some different dimensions to the qualitative findings Brophy reports. He does note that "much more information is needed about what kinds of classroom tasks and assignments are appropriate for accomplishing particular objectives with particular students" (p. IV-140), especially with the population which comprises Chapter 1 students, one might add.

The review on cooperative learning methods as an alternative to traditional independent seatwork is a means for managing student assignments. The Mexican American Education Study pointed to cultural differences between Chicano and Anglo children which included much more cooperative effort among the latter. Chicano children were able to manage cooperative tasks much more effectively than their Anglo peers. The work of Slavin, the Johnsons, and their colleagues seem to provide considerable promise with respect to cooperative learning methods. Cooperative learning appears to be effective both with respect to affective as well as academic goals, although there are apparently certain limitations regarding its appropriateness which Brophy notes (p. IV-142).

The section on interactions with context and learner characteristics, especially the discussion of student socioeconomic status/ability/affect, is particularly relevant to Chapter 1 students. Brophy asserts that low-SES or low-achieving students "need more control and structuring from their teachers; more active instruction and feedback, more redundancy, and smaller steps with higher success rates....more review, drill, and practice, and thus more lower-level questions....exposure to less material, but with emphasis on mastery of the material that is taught and on moving the students through the curriculum as briskly as they are able to progress" (p. IV-145 - IV-146). He suggests that low-SES students "are more likely to require warmth and support in addition to good instruction from their teachers, and to need more encouragement for their efforts and more praise for their success" (p. IV-146). While one would concur completely with Brophy's suggestions, it is interesting that there are no research references in this section, unlike most of the paper.

Brophy finds most research on compensatory education in other than regular classroom settings uninformative because of the absence of extensive classroom observation. One wonders why this is so. He does cite five studies in special educational settings and concludes that "the same aspects of the whole-class instruction/recitation/seatwork approach that are associated with achievement gain for students in general are also associated with achievement gain for" Chapter 1 students with two qualifications: Chapter 1 students "need even more active instruction and close supervision....more focused, structured, and redundant teaching and more personalized and supportive interactions...." And, in special small class settings with teacher aides, they can be paced more rapidly and "taught using individualized materials and instructional methods that are not feasible under more typical classroom conditions" (p. IV-148). These are two very important qualifications.

The review of what Brophy labels "other relevant research" adds some significant insights. The section on teaching cognitive strategies is particularly useful. Brophy suggests that "Chapter 1 students are among those most likely to need heavy doses of strategy training in addition to more traditional instruction in academic content and skills", although we do not yet know "how much can be accomplished through strategy training with low achievers" (p. IV-50). We can, however, begin to test the value of strategy training with Chapter 1 students and we can explore cognitive modeling with such students.

Brophy's discussion of mastery learning--an approach which at least theoretically should be especially useful with Chapter 1 students--is balanced and helpful. He concludes that "available research does not support the notion of wholesale replacement of traditional instruction with mastery learning approaches in typical classrooms"--something which has been advocated by some supporters of mastery learning--and that "there do appear to be potential benefits in attempting to implement at least some aspects of the mastery learning philosophy" (p. IV-154).

As with mastery learning, individualized/adaptive instruction and computerized instruction should, at least theoretically, be useful for Chapter 1 students. Brophy's discussion of two individualized instructional programs (ALEM and TAI) indicate potential but also problems with each and with the procedure generally. Slavin's (1985) caution in implementing TAI in inner-city classrooms is helpful in suggesting problems with individualized programs of this type generally with low-achieving students for whom they are meant.

While suggesting that computerized instruction should theoretically avoid problems associated with individualized learning systems, Brophy then indicates some advantages and some problems of computers. Among the problems he cites are differential access to computers between Chapter 1 and other schools, unavailability of appropriate software, and the cost of related technology. In the near future, Brophy thinks "teacher's options for integrating computerized instruction into their classrooms would be limited to drill and practice programs and educational games....computerized instruction is not yet a solution to the practical problems involved in individualized instruction in the typical classroom" (p. IV-161).

The conclusions Brophy draws seem well supported by his review, including the two common themes which cut across his findings: (1) "that academic learning is influenced by the amount of time that students spend engaged in appropriate academic activities" and (2) "that the students learn more efficiently when their teachers instruct them actively by structuring new information and helping them relate it to what they already know...." (p. IV-164). Brophy relates these themes to the task of maximizing achievement gains of Chapter 1 students with a number of suggestions which are clear and direct. Because the research cited does not deal with differences in language, culture, early experiential background, and a variety of other factors associated with Chapter 1 students, Brophy's implications make good sense but would have a firmer base were such research included. Are there additional implications for teaching low-SES, racial/ethnic minority group children in the context of classrooms and schools which are de facto segregated?

Wilkinson: Grouping Students for Instruction

Grouping students for instruction has been a controversial practice in American schools since at least the turn of the century. Despite the continuing controversy, grouping and tracking are widely practiced. Most recently, several of the so-called national reform reports have criticized grouping practices (Adler, 1982; Boyer, 1983; and Goodlad, 1983, for example). Oakes (1985) and Peterson, Wilkinson and Hallinan (1984) are two examples of recent publications which discuss research and philosophy of grouping and either raise new issues or explore old ones.

The four distinct traditional approaches to the study of grouping—sociological, sociolinguistic, process-product, and cooperative learning--which Wilkinson discusses at the outset do not have the same history. Certainly through the 1950s, what Wilkinson calls the process-product approach prevailed and dominated grouping research as most studies attempted to determine student outcomes from differing grouping patterns. Generally the focus was on homogeneous versus heterogeneous groups, the homogeneity usually being determined by IQ or achievement test scores. There were a few sociological studies during that period, beginning in the 1920s. However, the sociolinguistic and cooperative learning approaches are much more recent. The various grouping studies, having different purposes and foci and using quite diverse research approaches, add to the problems and complexities of integrating the findings. Wilkinson presents a model for integrating research on classroom groups which suggests four important sets of variables and hypothesizes their relationships.

Focusing on within-class grouping, Wilkinson presents two key issues: "(1) the bases on which students are assigned to groups, including the formation and stability of groups; and (2) the patterns of consequences for students of interactional processes in instructional groups" (pp. IV-186). More of the research literature deals with between-class grouping than with within-class grouping. However, the research literature dealing with both of the issues Wilkinson discusses is quite extensive and often quite equivocal.

Although the most common basis for within-class grouping is student ability with evidence that teachers try "to create and maintain instructional groups that are homogeneous with respect to student's ability" (p. IV-186) Other factors also affect the assignment of students to ability groups--"distribution of student aptitudes or achievement in school or classroom, organizational constraints within the school or classroom, and student management and discipline as well as the number, size and diversity of students within groups...." (p. IV-187). It is not clear from the report of the study by Sorenson and Hallinan (1984) what is meant by the statement that "the data showed that while racial composition of classrooms did effect the formation of ability groups, race in itself was not a criterion for assigning students to ability groups" (p. IV-186) It is significant that "teachers apparently used results from the tests differently for Black and White students in forming groups" (p. IV-187) When the claims of test bias are added to differential use of test results, the validity of the groups formed is called into question.

Although Wilkinson is focusing on within-class grouping, the between-class and between-school grouping affects the pools from which the within-class groups are drawn. That is, there is a good deal of evidence that low-income and minority children tend to be concentrated in lower-ability classes within which groups are then formed. The wide use of pullout programs for Chapter 1 instructional activities also affects the kinds of within-class groupings.

Wilkinson observes that "while instruction appears to be closely linked to patterns of within-class grouping, learning may not be so clearly associated" (p. IV-187). Research suggests that there is considerable irregularity in the differentiation of curriculum and instruction within-class groups as well as between classes. That is, frequently the curriculum, strategies, and materials are the same for each group with the exception of the pacing of instruction. In other instances, there are real differences in curriculum, strategies, and materials. As for the question whether "learning may not be so clearly associated" with patterns of within-class grouping, the studies Wilkinson cites seem to deal with the stability of groups once formed, not with learning within those groups.

Wilkinson suggests that the developmental level of students should be considered in the formation of groups, that there should be flexibility and reassignment when appropriate, and that students should not be labeled as members of low-ability groups lest their self-esteem is lowered and continued low-achievement results. The research on the effects of grouping on self-esteem, motivation and other affective behaviors is not as clear as some of the literature implies. For example, Goldberg, Passow, and Justman (1966) found that:

> In general, self-attitudes seemed to be rather more sensitive to grouping than were other nonacademic variables, but the effects of narrowing the range or separating the extreme levels were to raise the self-assessments of the slow pupils, lower the initially high self-rating of the gifted, and leave the intermediate levels largely unaffected. The slow pupils also showed greater gains in their "ideal image" when the gifted were absent than was true when they were present. (p. 163)

Wilkinson concludes that at the elementary school level, "students in low-ability reading groups fare poorly" and that this poor achievement "is thus the result of low expectations by the teachers and/or the poor quality of teaching that they receive" (pp. IV-189). However, this conclusion is tempered by another interpretation of the data: "That the low-ability students are, in fact, receiving appropriate instruction, given their level of performance and achievement" (p. IV-190). It is the latter interpretation which is the basis for much Chapter 1 instructional grouping--that low-achieving students can be provided with instruction and materials based on their diagnosed needs.

The research cited on all-student heterogeneous (mixed ability level) groups suggests that low-ability students apparently benefit in achievement if the groups are small enough so that they can be provided with what is required to support their learning. However, "unless teachers intervene to change the nature of the interactional processes in the direction that is beneficial for all students," all-student heterogeneous groups may contribute to maintaining the status quo.

Wilkinson's review of cooperative learning suggests that such techniques "do show positive effects on academic achievement, but these effects are fully dependent on the particular settings, measures, designs, and populations" (p. IV-192). Cooperative learning may provide a better environment for teaching basic skills as well as having a positive effect on racial relations. Whether a students' low ability is a function of lack of basic skills or of deficits in higher-order cognitive processing should determine which cooperative learning techniques will be most appropriate. Moreover, the developmental level of the student will determine the most appropriate cooperative learning situation.

The conclusion Wilkinson draws from her review is that "the research literature on within-class instructional grouping is not as complete as we would like to guide policy and practice" (p. IV-193). Goldberg et al. (1966) drew a similar conclusion:

> Many of the issues concerning grouping remain unresolved, and most questions are still unanswered despite seventy or eighty years of practice and at least forty years of study. Insufficient and conflicting data are being used to support partisan views concerning the consequences of grouping rather than to resolve the persistent issues. (p. 21)

Wilkinson agrees with Carter (1984) that "grouping students for instruction within Chapter 1 classes may be a useful educational practice to stimulate the learning of low-achieving, disadvantaged students" (p. IV-194). The implications for Chapter 1 Wilkinson suggests make sense:

- Consider many factors in assigning students to groups, especially individual students' needs and characteristics.

- Reassign students to groups and alter groups as seems appropriate.
- Use a variety of grouping practices (including teacher-led and all-student groups) to help students' learning

- Teach students how to interact effectively in small groups so students learn both cognitive and social skills.

- The quality of instruction the teacher provides and the assistance other students provide should be appropriate to the students' level and skills.

These implications make sense considering the research and experience available and the deeply ingrained phenomenon of within-class and between-class groupings. Wilkinson agrees with Dreeban (1984) "that grouping within classes may be used to increase students' achievement, and address individual differences, provide differential instructional methods" (p. IV-195). This is the basic argument which has sustained grouping as a widespread practice in American schools. She suggests further research is needed. Research which focuses on the particular needs and characteristics of Chapter 1 students and the consequences of varied grouping practices on these students with their diverse needs would be especially useful. In the meantime, it might be well to keep in mind that the purpose of grouping is to facilitate learning and teaching and that flexible, varied grouping techniques are needed.

Although Goldberg et al. (1966) studied between-class groupings, two conclusions warrant repeating here:

> ....simply narrowing the ability range in the classroom does not necessarily result in greater differentiation of content or method and is not associated with greater academic achievement for any ability level.
>
> ....narrowing the range of ability (on the basis of group intelligence tests) per se, without specifically designed variations in program for the several ability levels, does not result in consistently greater academic achievement for any group of pupils. (p. 161)

Having stated those conclusions, one must point out the current argument of Goodlad (1983) and others that such differentiation denies equal access to knowledge and, as a consequence, contributes to inequity.

Romberg: Mathematics for Compensatory School Programs

In his introduction, Romberg indicates that what is addressed "is the reality of mathematical compensatory programs and how they meet or fail to meet" the intentions of the social legislation which has been enacted to help underprivileged children (p. IV-5). His approach is to make three comments about the studies he reviewed and raised six issues which he believes must be dealt with by those interested in compensatory education in mathematics. His comments were intended to focus attention on "some interesting and even disturbing aspects" he found from his review.

Romberg observes that: (1) "there is no analysis of the mathematical deficiencies of low-income children or what constitutes the important ideas from mathematics they (or all children) should know (p. IV-6);" (2) "the approach to compensatory education in these studies contained no statements of goals or even a description of a desirable end product (p. IV-6);" and (3) the programs could be organized into three broad categories: enrichment, differential, and developmentally based. The enrichment programs were based on an assumption that "low-income children lacked a variety of experiences and needed those experiences and intellectual challenge in order to make them similar to the middle-class students" (p. IV-5). Differential programs were based on the assumption that if children differ, then classroom organization and procedures must be differentiated. Independent-paced instruction which takes into account rate of learning and highly structured instruction which uses direct drill methods were evolved. Developmentally based programs were grounded on developmental psychological theories such as the child's level of logical concept thought.

Romberg observes that "if one views mathematics as things human beings do such as abstracting, inventing, proving or applying....there is nothing in the programs....reviewed that would give low-income students an opportunity to do any important mathematics" (p. IV-11). Clearly, Romberg believes the same is true about mathematics programs for all children, not just low-income children. The goal of most compensatory education programs is to help such students attain acceptable scores on standardized mathematics tests, not "to do any important mathematics."

Six issues are posed by Romberg which he believes should be addressed as a basis for developing a program which is mathematically sound and "would provide all students an opportunity to learn mathematics" (p. IV-11). These are (1) the fragmentation of mathematics so that the interconnectedness of mathematics ideas is lost; (2) the conception of learning as passive absorption of information and the failure to apply knowledge from cognitive science to mathematics instruction; (3) the deskilling of teachers who have become only managers of resources; (4) the creation of differential opportunities for learning for low-income students resulting in a widening of the differences between them and more affluent students; (5) the defining of the curriculum by workbooks and judged by tests which are inadequate and inappropriate; and (6) curriculum change which is rarely assimilated into the school as the developers intended.

Romberg believes that all education, especially mathematics education, is too narrowly mechanistic, with mathematics instruction consisting of the "acquisition of a prescribed amount of knowledge under competitive conditions and time pressures" (p. IV-16). He provides what he calls a basis for developing a contemporary mathematics program which represents a new perspective for compensatory mathematics programs. In sum, Romberg argues that mathematics instruction needs to be changed and that a good place to initiate that change is to develop a contemporary mathematics program for low-income students.

At the root of several mathematical education dilemmas, Romberg notes, is the "distinction between knowledge and the record of knowledge, knowing and knowing about" (p. IV-16). The emphasis in mathematics instruction, he argues, must be "on experiences which help [students] know mathematics--when mathematical knowledge means knowing and doing mathematics rather than knowing about mathematics, other things follow" (p. IV-17). This calls for redefining the work of the students and the work of the teachers. The work of students becomes that of constantly extending "the structure of the mathematics that they know by making, testing and validating conjectures, which may originate as postulates of conscious thought or be derived intuitively" (p. IV-18). The work of the teacher becomes that of providing the environment, acting as a mentor, and getting out of the way .

Even if a common mathematics curriculum were developed, interest groups would argue that knowledge about differences among individuals should be considered in making instructional decisions, differences which are based on differential psychology, developmental psychology and sociology. There are differences in perspectives about individual differences and differences in conclusions about how instruction should be differentiated. There are those who argue that "instruction should be adapted to 'complement' differences;" or "that instruction on the same mathematical units should be adapted to 'compensate' for differences;" or "that different students should have the option of being taught different mathematics."

Romberg acknowledges that each of these perspectives are currently found in schools but does not indicate which, if any of the arguments, he accepts as being appropriate to the new contemporary mathematics curriculum he would develop. He simply suggests that considerable open discussion and serious debate should be carried out.

Romberg's paper takes the position that mathematics education as it exists in schools today is inadequate and that compensatory education in mathematics reflects the inadequacies of mathematics instruction generally. He would begin by developing a new contemporary mathematics program that would reflect, in some ways, the contemporary mathematics programs which developed in the 1960s. He would then deal with what he calls the serious, social-political question, regarding the consideration of individual differences with respect to the teaching of the common course of study of mathematics. This represents a major challenge in curriculum and instructional materials development as well as teacher education. It is a task which Romberg implies is needed if we are to come to grips with compensatory education in mathematics as a subset of the larger problems of reforming mathematics education for all children.

Calfee: Curriculum and Instruction — Reading

Calfee bases his draft report on two chapters--"Research on Teaching Reading" and "Human Diversity: Implication for Schools"-- plus other documents and experiences. One of the documents he refers to is Teaching Reading in Compensatory Classes which he coedited with Priscilla Drum (1979) in which "we tried to bring together the diverse threads from the various surveys of practices in compensatory classes" (p. IV-5). This undoubtedly would have been a helpful document to have on hand. The chapter on "Research on Teaching Reading" seems to be a very comprehensive well-crafted review which does not deal specifically with compensatory education or disadvantaged children. The chapter on "Human Diversity: Implications for Schools" has more direct relevance to compensatory education. Calfee opens that chapter with the statement: "The single most important dimension of psychological, social, and educational diversity among human beings is probably marked by the distribution of wealth, and the power wealth represents." [Calfee believes he would now omit the word "probably."] The chapter deals with diversity in the home and community, in the school, and in students before discussing diversity, decision-making and equity. Calfee raises a number of issues and concerns regarding equal educational opportunity which have important implications for reading.

Beginning with his conception of literacy and the literate person and the place of reading, Calfee arrives at four conclusions which he presents for consideration for alternative strategies to teaching reading.

First, Calfee concludes that "the kid's not the fault." There is a prevailing belief "that the child from a disadvantaged environment is a problem, and one that the school will be hard put to deal with" (pp. IV-42). Noting that some compensatory education programs have had a positive effect on student performance, Calfee questions the "starting assumption....that something special needs to be done, either qualitatively or quantitatively: an earlier start, more time in school, smaller class size, individualized attention, a more structured program, and so on" (p. IV-42). He hypothesizes "that the present methods for promoting literacy are in fact off the mark, that they pose a challenge to the more able students, but are virtually pathological for the child from a lower-class home" (p. IV-43). He believes that "a teacher's expectations (or lack thereof) about a student's potential leads to instructional decisions that can be to the detriment of the student's success" (pp. IV-43). Changing such expectations could lead to changes in instructional decisions. He argues that low-income students have trouble with standardized tests, but that they are not stupid and do know a lot about the world which teachers seem not able to tap and use.

Second, Calfee concludes that "schools cannot afford 'failure'....they can no longer operate as a selectional system certifying the middle-class child and 'dropping out' the lower-class youngster" (p. IV-47). He assumes that the conditions exist which would enable schools to become more effective with all youngsters, especially low-income students.

Third, Calfee concludes that students from disadvantaged homes should not be taught as if they cannot learn. While there are many problems in curriculum and teaching for middle-class children, Calfee finds them few compared to those for the disadvantaged child where the "underlying assumption seems to be that the student has few relevant experiences and cannot think" (p. IV-48). Low-income students encounter programs and practices which differ and are less likely to develop literacy—a stress on decoding and a neglect of comprehension, requests to "sound out words" rather than make informed guesses, rare requests to justify an answer, appropriate feedback that is balanced between support and correction, noncontingent positive feedback, and appropriate pacing. Calfee hypothesizes that if "the curriculum was more straightforward, that the tasks were rendered in more explicit fashion, and that students were provided with adequate instruction in the tasks....the amount of differentiation between children from lower- and middle-class backgrounds might be relatively small" (p. IV-49).

Finally, Calfee concludes that "changing present organizational patterns may make it easier to succeed" (p. IV-50). He suspects that "tracking, pullout programs, reliance on paraprofessionals to monitor remedial learning" and a variety of other practices serves as barriers rather than facilitators "to improving the curriculum of literacy for youngsters at risk" (p. IV-50). His conclusion is that programs should be funded aimed at improving schools as educational organizations instead of programs targeted to the individual student. What would be involved in "improving schools as educational organizations" other than eliminate or somehow alter pullout programs and grouping at the classroom and within-class levels, is not detailed. Calfee notes that he has yet to see clear instances of positive effects from ability grouping, with the possible exception of gifted students.

Calfee's "conclusions" are intended to serve as implications for compensatory reading instruction. He does not review or comment on the various reading systems, programs, materials, and designs which have emerged since the 1960s aimed at providing developmental and/or remedial instruction for disadvantaged students and one implication from his conclusions is that they are basically irrelevant and of little value in contributing to the development of literacy among these at-risk youngsters.

Adams: Teaching Thinking to Chapter 1 Students

In her concluding section, Adams states that she had two goals in writing the paper: (1) to argue that Chapter 1 students could profit from instruction on thinking and that such instruction would have maximum impact if it were presented as a separate course and (2) to discuss the issues and options which should be considered prior to adapting a course on thinking skills. Considering the proliferation and popularity of programs designed to enhance children's thinking, Adams' approach to reviewing the status of curricula on thinking is useful and helps focus thinking about teaching thinking. Her selection of programs for illustration, analysis and evaluation is helpful. Moreover, Adams clearly has the Chapter 1 population in mind as she reviews research, discussing the implications of the fact that a "large proportion of the Chapter 1 population is comprised of children who, for reasons of ethnicity, or parental education, fall outside the mainstream culture of our society" (p. IV-101). The implications for cultural environments as determiners of the kinds of experiences to which individuals are exposed are discussed in making the case for teaching thinking to Chapter 1 students.

Adam's discussion of the different bases on which thinking curricula have been developed--targeting of "macrological skills" vis-a-vis targeting of "micrological skills"--is helpful in understanding the programs she chooses as illustrations. Common to all programs on teaching thinking is the assumption "that there exists a certain set of skills or processes that are common to thinking in general" (p. IV-87). In fact, three of the curricula discussed--the deBono CoRt Thinking Materials, Lipman's Philosophy for Children, and The Productive Thinking Program of Covington et al.--are the focus of presentations regularly given at conferences and workshops on education of the gifted.

Adams notes that it is difficult to compare the programs on the basis of evaluation data because the data "are often flawed in design and control" (p. IV-90), and, there is a good deal of advocacy rhetoric associated with the literature on thinking. She observes that the good news is that "virtually every reported evaluation includes evidence of some gains and amidst the various evaluation efforts there are also some extremely positive results" (p. IV-90). There is also, she observes, "room for disappointment."

To a greater or lesser extent, the six programs are all beset by three limitations: "transfer or generalization of the processes taught in these courses is limited" (p. IV-91), the programs seem to work best with better students (e.g., gifted) and Chapter 1 students are less likely to be among the better students (p. IV-97), and the programs differ in their useability by teachers, some requiring considerable investments of teacher training time. Adams examines each of these topics--transfer, individual differences, and teacher useability--thoughtfully, if tersely.

With regard to transfer or generalization, Adams asserts that "the purpose of a course on thinking is to enhance students' abilities to face new challenges and to attack novel problems confidently rationally and productively" and, in the case of Chapter 1 students "to create the intellectual leverage to catch up and move on" (p. IV-91).

Her brief discussion of the significance of schemata with respect "to our ability to understand what we hear" has implications not only for curricula on teaching thinking but for curricula more generally. She argues that content-free efforts to teach thinking skills are more likely to succeed than content-oriented approaches since the latter will "be remembered, understood and--importantly--accessible only in relation to that content" (p. IV-92). Intuitive Math and Think would seem to have resulted in significant gains for Chapter 1 students while Philosophy for Children seems to have produced gains in reading comprehension and/or logical thinking. Adams concludes that in order to maximize transfer, a thinking skills course should "result in a single, well-integrated schema.... centered on the principles and processes the course was intended to develop, and it must be richly and diversely elaborated with concrete or real-world instances of application (p. IV-96).

For Chapter 1 students for whom "their knowledge, skills, and interests tend to be unpredictable both within and across individuals" (p. IV-97), process-oriented approaches to teaching thinking skills seem to be most promising. Whether or not "better students tend to be relatively homogeneous in terms of general knowledge and school skills" (p. IV-97) is arguable but not important in terms of the point being made.

In Conclusion

The five papers provide different kinds of reviews of research in the areas on which they focus, dealing mainly with general research rather than compensatory education research. For the most part, they avoid the controversy concerning the etiology of educational disadvantage. In doing so, the reviewers seem to agree, at least implicitly, with Calfee's conclusions that the problem is not with the disadvantaged child and that improved teaching and raised teacher expectations as well as improvement of schools as educational organizations will raise achievement levels. There are not many discussions of the effects of alternative designs in the sense of the planned variations studies conducted in connection with the Follow Through Program (Emrick, Sorensen, & Stearns, 1973).

Considering the controversy concerning the significance of cultural, language, and linguistic experiences of low-income and racial/ethnic minority children in beginning reading and other instructional areas, the omission of this literature could imply that these reviewers do not think that those differences make a difference with regard to curriculum and instruction of disadvantaged students. There are educators who believe that good reading instruction for middle-class standard English speakers (whatever that may encompass) is good reading instruction for all students regardless of mother tongue or dialect or family culture. There are educators who believe that there is such a thing as "dialect interference" and conflict between communication systems and those who view this notion as irrelevant in designing instruction. The equivocal nature of much of the research on grouping, both between-class and within-class, results in drawing very different conclusions about the outcomes of such practices, although at the moment, ability grouping is not well regarded by educational reformers despite its widespread practice. The power of teacher attitudes and teacher expectations on student outcomes has long been recognized. How to change those attitudes and expectations has not been well established as yet. The evaluations of compensatory education programs and practices (e.g., Carter, 1984; Walberg, 1984) have not provided clear directions regarding their effectiveness although obviously the problems associated with the poor school performance of disadvantaged populations still exists.

The conception of the nature and etiology of educational disadvantage has, or should have, an impact on curriculum and instructional programs and practices designed to reverse school failure. This is the basis of compensatory education and yet it is often assumed or ignored. Since none of the reviewers have included the possible effects of linguistic, language, cultural, health or other differences in their reviews, one must assume that these differences are considered as having little or no impact. Taking this as an assumption, then the implications for Chapter 1 students which the reviewers present seem appropriate--research suggests that those programs and practices work with other students and should work with Chapter 1 students as well. In his conclusions, Brophy uses the phrase, "Chapter 1 students (or any students for that matter)."

Brophy concludes that the key to maximizing gains of Chapter 1 students is "maximizing the time that they spend being actively instructed by their teachers or supervised as they work on assignments (assuming that both the instruction and the assignments are pitched at an appropriate level of difficulty and otherwise well suited to the students' current needs)" (p. IV-164). Since Brophy does not discuss the literature on curriculum--the what to teach--the "appropriate level of difficulty" and the suitability require further discussion and specification. One of the problems with the time-on-task literature is that students may spend a good deal of time on tasks which are not necessarily appropriate or suitable. Brophy's suggestions regarding small-group instruction and individualized instruction and the possibilities for matching assignments to individual needs must be viewed in the context of Wilkinson's findings regarding within-class grouping since that is the approach which will be normally used to arrange small groups or individualized instruction. Calfee raises some cautions about grouping within class, although he does not specify the alternative directly.

Compensatory education efforts have witnessed a good deal of activity in the development of instructional materials which may be more structured, more culturally relevant, more oriented to independent work, or a variety of other goals. Brophy suggests that the teacher should carry the content to the student, not rely on the materials to do it. Have publishers who have developed materials which are culturally pluralistic and urban oriented, for example, missed the mark or are different kinds of materials required?

Brophy recommends that teachers should receive "systematic training in classroom organization, lesson presentation, and seatwork management skills involved in effective implementation of the traditional whole-class instruction/recitation/seatwork approach" as a base from which they can then "phase in grouping, differentiated instruction, cooperative learning methods, and other adaptations" (p. IV-165). He cites the Kamehameha Early Education Program (KEEP) as an example of a comprehensive program of "curriculum and instruction that draw[s] eclectically but planfully from the full range of available knowledge in devising effective methods of accomplishing specified goals" (p. IV-166). The KEEP program seems to attend to a variety of elements which Brophy suggests are important, including attention to native Hawaiian cultural traditions which reduce the "degree to which school norms clash with these traditions" (p. IV-167). KEEP is a beginning reading program for low-income children.

Wilkinson expresses many reservations about within-class grouping but does conclude that "grouping students for instruction within Chapter 1 classes may be a useful educational practice to stimulate the learning of low-achieving, disadvantaged students" (p. IV-194). The recommendation is accompanied by some suggestions regarding the formation of such groups, the need for flexibility, the use of a variety of grouping practices, the need to teach students skills required for functioning in groups, and the provision of appropriate quality of instruction. Calfee, however, expresses serious reservations about grouping practices and their outcomes.

The possibility of stigmatizing low-ability low-achieving youngsters by designating them as Chapter 1 students and placing them in groups is a real problem. Staff development and staff planning have to be undertaken to sensitize teachers to the interactive behaviors which will help ameliorate or prevent this problem. Every pullout program--whether it be for the gifted, Chapter 1 students, or any other group--can result in attitudinal problems unless a climate is established in which differentiation is viewed as a natural event.

One aspect of within-class grouping which is seldom discussed is the fact that many schools have large concentrations of low-achieving racial and ethnic minority children. Studies often are concerned with the impact on low-ability youngsters in classes with students who cover the full range of ability and achievement. But many so-called Chapter 1 schools, while enrolling the whole range of academic ability, have a large majority of their students who are low achievers. In California, for instance, minority enrollment in grades K-12 is expected to exceed 50 percent by 1990. An estimated 23 percent of 5- to 17-year olds in California speak a language other than English at home. Students with limited-English-proficiency already compose almost 12 percent of K-12 enrollment with 41 different languages represented (Policy Analysis for California Education, 1985, p. 1).

Adams' discussion of cultural environments affecting cognitive development is important: "Specifically, cultures differ in the uses they make of thinking and knowledge. This impacts not only on the kinds of thinking and learning a culture fosters, but also on the attitudes it fosters toward thinking and learning" (p. IV-102). Cultural and environmental differences in planning instructional strategies cannot be ignored and yet many curricula assume that such differences are irrelevant. Adams argues that "a good course on thinking skills would be an invaluable boost for [Chapter 1] children... it would give them the critical, analytic, and organizational abilities and attitudes to make the most of the information they do have and will be exposed to" (p. IV-102). She suggests that, of the six programs discussed, Think and Intuitive Math, would seem most promising since they are specifically designed for low-achieving youngsters and their content "has been carefully contrived to connect to and enhance the students' performance in language arts and mathematics" (p. IV-103)--the twin goals of many Chapter 1 programs.

The issue of useability by teacher--the extent to which teachers can be expected to use these programs without extensive and intensive training is raised. The curricula discussed differ widely in this respect and Adams suggests that there are tradeoffs to be considered.

The Odyssey: A Curriculum for Thinking program is discussed in terms of the experience of implementing it in Venezuelas barrio schools. Feuerstein's Instrumental Enrichment programs was also widely tested in Venezuela and it would have been interesting had the experiences and evaluations of the two programs been compared.

The description of Odyssey, the rationale for its design and the population for which it is intended, would suggest that it is a thinking program which may have promise for Chapter 1 students.

Adams concludes: "For Chapter 1 students especially, the direct teaching of thinking promises to be the best institutionalizable means of developing the competencies and attitudes they need to make the most of their schooling and their lives"

(p. IV-115). Adams' paper makes a strong case for testing this statement as a hypothesis. The data do not yet warrant direct teaching of thinking without considering the issues Adam raises in selecting from and implementing a curricula for teaching thinking.

Early on, a concern was expressed regarding the absence of consideration of the linguistic, affective, social, developmental, cultural, learning styles, and other characteristics of low-SES, racial and minority children and youth. It was asserted that such children are like all other children in many ways but that they do have unique and different needs as well which require programs and services which we call compensatory education. If the research reported reflects the position that human diversity exists among all children and that curriculum and instruction must deal with that diversity, then the suggestion that the recommendations are appropriate for Chapter 1 students or any students for that matter, is valid. However, teachers and planners must understand which human differences make a difference and attend to them in their planning.

As Carter (1984) observed:

> There is a complex interaction between the curriculum, the characteristics of teachers and administrators, the social and economic characteristics of the school, and the background of students. This leads to the unfortunate situation that in attempting to improve performance of disadvantaged students, one must improve a large number of educationally relevant factors, and there is no simple solution to the problems of improving the education of disadvantaged children. (p. 12)

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VISION AND REALITY: A REACTION TO ISSUES IN CURRICULUM AND INSTRUCTION FOR COMPENSATORY EDUCATION

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VISION AND REALITY: A REACTION TO ISSUES IN CURRICULUM AND INSTRUCTION FOR COMPENSATORY EDUCATION

In recent years substantial progress has been made in our knowledge about teaching the basic skill subjects of reading and arithmetic, especially to lower-achieving students in the early elementary grades. In their papers prepared for this conference, Romberg, Calfee, Adams, Brophy, and Wilkinson do an excellent job of summarizing components of this knowledge and relating them to significant issues of curricular and instructional policies for compensatory education.

Each paper has several important features that merit recognition and comment. However, I saw my function at this conference as one of integration rather than commentary. In structuring my remarks, therefore, I have attempted to track some of the common themes that run through these papers. Although this approach precludes attention to details of individual papers, I see this tracking exercise as valuable for interpreting the diverse lines of inquiry represented in these papers and for establishing a general framework for thinking about compensatory education programs.

My comments are organized around a framework for interpreting instructional research. The framework is constructed from an analysis of what appear to be central dimensions that drive program effectiveness (Doyle, in press b). The focus is on basic treatment conditions that seem to account for how instructional effects are achieved. Within this framework, findings from instructional research are viewed as sources of _analytical categories_ that can be used to reason about teaching and construct solutions to classroom problems rather than as sources of guidelines that teachers can apply directly in their classrooms. At the level of program planning, these analytical categories would seem to be especially useful in directing attention to significant features of instructional effectiveness.

Interpreting Instructional Research

All of the authors devoted a substantial part of their reviews to matters of instruction and instructional effectiveness. Calfee paid close attention to how reading instruction is conducted and how it might be changed to be more consistent with what we know about reading processes. Brophy's review of process-outcomes research provides a marvelous overview of the multiple dimensions of teaching and learning in classrooms. Indeed, Brophy's reviews of research in this area are distinctive in one important respect: rather than simply cataloguing the raw "findings" of individual studies, Brophy uses these findings as data points which specify a much broader model of teaching practices and their effects. This model is used, in turn, as a framework for integrating major findings and for generating new practices that are recommended because of their consistency with these findings rather than their direct empirical base. This approach is of considerable value in making sense of the findings from separate studies in this area.

How can this rich array of instructional research data be used to think about alternative designs in compensatory education? To answer this question, I constructed three analytical categories, viz., content coverage, explicitness, and accountability, that, taken together, appear to synthesize much of the current research knowledge and enable us to account for the ways in which program effects occur.

Content Coverage

Content coverage, as measured by such indicators as opportunity to learn, curriculum pace, and academic learning time, has strong empirical support as a central dimension of instructional productivity. As an analytical category, coverage focuses attention on curriculum and specifically the extent to which the content covered in class matches the official curriculum embodied in school district documents and achievement tests. Indeed, little connection between teaching events and measures of student outcomes can be expected if content is not common across these two domains. At the level of application, one suspects that dramatic changes in school achievement can be traced largely to an increased alignment of the content of instruction with the content of the criterion measure. It can also be noted that the provision of compensatory instruction through "pullout" programs or extra tutorial sessions can have the effect of multiplying the number of curricula low achievement students must cover unless careful attention is given to the alignment of content across instruction settings.

Student engagement. Student engagement is implied in the concept of coverage as commonly used in studies of teaching effects. If the teacher is the only participant in classroom events who ever actually works with the curriculum, then it can hardly be said that the content is being covered in any meaningful sense. Content must be covered, in other words, by the students, and any instructional procedure that leads to such student engagement with content is likely to be effective.

Placing engagement or "time-on-task" as a subcategory within the area of content coverage has an important advantage:

It highlights the *task* dimension of the time students spend in instruction and militates against the questionable conclusion that time by itself is an instructional treatment.

Content representation. Brophy postulates an interesting contrast around the theme of how the curriculum is conveyed to students, suggesting that teachers who carry the curriculum personally to students are more successful in enhancing achievement than those who rely on materials to do this transporting. The precise reasons for this effect are not altogether clear, except perhaps, as Calfee suggests, the materials themselves as well as the directions supplied to teachers on how to use them are often quite poorly designed.

The issue of content representation, i.e., the form content takes in classrooms, is rightfully beginning to acquire prominence in teaching research. Indeed, this issue is central to what might be called the "curriculum" papers by Romberg, Calfee, and Adams in which they explore the nature of mathematical knowledge, or reading, or thinking.

In my own work I have been drawn to the view that content is represented fundamentally in the *work students are required to accomplish* in classrooms rather than simply what teachers say or how materials are designed (Doyle, in press a). This view calls attention to the assignments students are given and to the way in which the products students generate in response to these assignments are judged by the teacher. As will be seen shortly, this view of content representation will provide a useful framework for examining other aspects of curriculum and instruction in compensatory education.

Domain specificity. The issue of content coverage is related to a theme Adams sounds in her struggle with the problem of the domain specificity of thinking skills. This problem is usually framed as a transfer question: Can students acquire broadly applicable thinking strategies that improve their efficiency in processing information in several curriculum domains? This question seems especially applicable to compensatory education since many students in compensatory programs have obvious limitations in their strategies for handling academic work.

I will consider the question of the appropriateness of thinking strategies as an approach to compensatory education in the next section. With respect to the transferability of thinking skills, I remain convinced that the acquisition and utilization of information-processing strategies is fundamentally domain specific (Doyle, 1983). In other words, an understanding and flexible application of intellectual processes is knowledge driven. To know what to do when, one must know the substance of a field. As Romberg suggests in his paper, such problem-solving abilities are embedded in semantic knowledge of the structure and connectedness of a discipline. Without this context of knowledge, skills are highly abstract.

Adapting instruction (and curriculum). The most startling and potentially revolutionary theme emerging from these papers has to do with the foundations of instructional design for compensatory programs. Conventional wisdom has it that instruction for compensatory education should be based on mastery assumptions. The argument is that low-achieving students have not acquired the entering capabilities and perhaps lack the inclinations needed to accomplish academic tasks on their own. As a result, they need strong "individualized" or "adapted" instructional support in the form of explicit goals, a carefully planned sequence of small steps through the curriculum, frequent testing and feedback, and supplemental or "compensatory" instructional time.

In practice, these *instructional* considerations have important, but often overlooked, *curricular* consequences. The requirement to translate curriculum into a sequence of small, explicit steps limits the kind of knowledge that can be conveyed to students (Jackson, 1985) and, Romberg argues, represents content as discrete skills rather than as a semantic network of information structures and processes. As a result of this fragmentation of curriculum, students do not acquire an adequate semantic framework to give meaning to the discrete pieces of content they encounter. As Calfee maintains, efficient thought requires a coherent mental representation, and it is precisely this coherence that is lost in fragmented remedial programs. As a result, compensatory programs often do not enable students to apply their skills in complex situations which differ from the constrained instructional context in which they were acquired. In other words, little transfer from compensatory to regular classroom settings occurs.

A similar argument can be constructed from the grouping studies reviewed by Wilkinson. Grouping, both within and between classes, often leads to curriculum differentiation. Students in high-achieving groups have many opportunities for self-direction and self-pacing in structuring their own tasks and approaches to learning. Students in low-achieving groups are typically relieved of the responsibility to structure their learning because tasks are simplified and instructional prompting is high. Thus, low-achieving students have fewer chances to experience knowledge domains in their full richness of meaning—to read or to do mathematics—than their higher-achieving peers. Moreover, the rules for behaving in low-achieving groups are often different from those in higher-achieving groups. In the end, low-achieving students have little opportunity to learn how to participate independently in regular school work.

The central point here is that instructional differentiation often results in an unintended curriculum differentiation and this latter differentiation can defeat the long-term goal of empowering compensatory students to participate successfully in regular classroom settings. Certainly there is evidence that mastery programs can improve the performance of low-achieving students on standardized tests. To an ever increasing extent, however, this accomplishment is being criticized on the grounds that the content represented in standardized test items is an inadequate representation of knowledge structures in various disciplines. Thus, test performance does not necessarily equal true achievement in a knowledge domain. Moreover, high performance on standardized test items may be symptomatic of either understanding of a knowledge domain or training to the test. In the latter case, test performance is illusory because it does not reflect empowerment in the knowledge structures required to do academic work. Indeed, as Romberg suggests, it may well be that the problems of sustaining effects in compensatory education can be traced to the failure of mastery programs in establishing an adequate semantic context for understanding and using intellectual skills.

Content appropriateness. Many have suggested, or course, that a curriculum geared to knowledge structures and understanding is inappropriate for low-achieving students, at least until they have mastered "basic" skills. On the other hand, there is considerable anecdotal and even some formal evidence that an emphasis on thinking has significant consequences for improving performance in compensatory programs (e.g., Pogrow & Buchanan, 1985). This theme, of course, runs through Adams' analysis of programs that attempt to teach thinking skills. In many instances it seems that programs which are heavily academic presuppose academic ability and are successful primarily with high-achieving students. On the other hand, programs which rely on everyday knowledge of the world stimulate interest and participation among compensatory students but their effects do not readily transfer to academic work.

Explicitness

Explicitness directs attention to a central dimension of teachers' explanations, assignments, prompting, and feedback of classrooms. Most instructional research indicates that a high degree of explicitness in defining goals, specifying assignments, explaining how work is to be accomplished, and providing guidance and feedback is required, especially in the early stages of learning or when working with novices or with students who lack academic skills. It is important to underscore that explicitness does not necessarily imply an emphasis on rote memorization or mindless drill and practice. Explicitness simply means that students are told or shown what they are to learn and how to use specific cognitive operations to accomplish work. For example, students can be told directly how to select the main idea of a passage or how to formulate a cause-and-effect argument. Indeed, many have argued that explicit teaching is appropriate, in principle, for comprehension, problem solving, and other complex forms of academic work for which the underlying processes can be explained or demonstrated by teachers and practiced by students (Brophy & Good, 1986; Carnine & Stein, 1981; Collins & Smith, 1980; Pearson & Tierney, 1984; Rosenshine & Stevens, 1986).

At the same time too much explicitness about tasks can be counterproductive. A high degree of explicitness about operations to use in accomplishing work or about the character of the final product reduces the need for students to struggle with meaning, make their own decisions about work, and generally to participate in generating their own knowledge in a domain. If, for example, the purpose of an assignment is to have students learn to interpret information or make decisions about how and when to use skills and strategies, then the task must be sufficiently ambiguous to leave room for students to exercise their own judgment.

The management of explicitness can be a tricky business for teachers (Doyle, 1983). As Calfee argues, a failure to provide adequate specifications for work, sufficiently clear explanations of what to do, or appropriate feedback for performance can make it impossible for students to accomplish tasks and lead to the invention of erroneous strategies and understandings. At the same time, over-specifying requirements and operations can restrict the range of opportunities students have to learn important aspects of the curriculum. Moreover, there are classroom pressures that impinge upon teachers and shape their explicitness during lessons. Studies of academic work suggest that ambiguous tasks are often unstable in classrooms (Doyle & Carter, 1984). Management of the work flow is difficult when students are struggling with ambiguity. Errors increase and completion rates decrease. And some students are skilled at eliciting explicitness from teachers in order to circumvent task demands. Under such circumstances, teachers have a difficult time maintaining appropriate levels of explicitness in instruction.

There is an interesting connection between explicitness and abstractness. It is typically assumed that explicit instruction, because it is specific, reduces abstractness. But, as Greeno (1980) observes, the statement "2 X 4" is quite abstract despite its broad familiarity. To what? Four what? And, if the answer is only an item in memory, "times" is a fundamentally mysterious operation. This analysis suggests that abstractness is a function of semantic context. If students fail to understand what academic propositions mean or if meaning is limited to familiar operations in classroom task systems, then little enduring academic achievement can be expected to result from teaching.

Accountability

Findings from process-product studies of teaching suggest that accountability for work, achieved through such means as checking homework and monitoring progress, is strongly associated with student achievement. Studies of academic work in classrooms (Doyle, 1983) similarly have indicated that accountability drives the curriculum for students. Students attend to tasks for which they are held accountable and expend energy to understand and negotiate requirements. In a very real sense, the policies that govern accountability in a teacher's class define the functional curriculum for students by activating and directing student engagement.

Like explicitness, accountability is a difficult aspect of classroom life to manage. Stringent requirements, especially for inherently demanding work, can discourage students, increase tensions in teacher-student relationships, and reduce intrinsic motivation to learn. Softening accountability can suggest to students that the work is not important or can be accomplished without careful attention to detail. And some students are skilled in reducing the risk associated with accountability for tasks by eliciting a teacher's generosity in judging products. Many teachers cope with these complex demands by creating a surplus economy of credit in classrooms that can be used to reduce risk to encourage students to attempt demanding tasks while maintaining a climate of accountability. In the end, however, one suspects that this shifting of accountability standards has a powerful effect on the importance students attach to school work.

The Problem of Meaning in Classroom Work

My reactions to the curriculum and instruction papers centered on two basic themes. First, curriculum (i.e., the substance of teaching events) is a central but often overlooked dimension in program effectiveness. Second, the curricula of most compensatory programs does not represent well the knowledge domains which give meaning to discrete skills. Unfortunately, much of the program planning in compensatory education has concentrated on instructional processes rather than curriculum functions, and, as we are beginning to learn, the consequences are problematic from the perspective of the type of empowerment students acquire in compensatory programs. At the same time, most of the curriculum ideals, particularly with respect to the semantic representation of content in school work, are quite difficult to translate into classroom events. In the end, there appears to be some fundamental tensions between vision and reality in compensatory education. I will explore these tensions in terms of the problem of meaning in classroom work.

The problem of meaning in classroom work if formidable. In many classes students seldom accomplish tasks in which they are required to struggle with meaning. Of course, they often struggle with the meaning of work: What are they supposed to do, when do they have to finish, what is the answer to the fifth problem, etc. But meaning itself is seldom at the heart of the academic tasks they accomplish. Grammar usually consists of selecting one of two words in parentheses that "sounds right" rather than an effort to express a thought accurately and clearly. Writing assignments frequently require students to follow a format to construct a text that has a specified number of adverbs and transition words rather than an occasion to communicate ideas. And math problems are typically exercises in computation rather than interpretation and decision-making.

A concern for meaning would require that a teacher focus explicitly on the semantic thread that ties tasks together across separate class sessions. When students are studying topics which extend across several days, such as the nature of the scientific method or the operations of the circulatory system, a teacher needs to describe the connections between lessons in order to build broad understandings of content and place individual tasks within a wider context or understanding. In addition, a teacher must design tasks that require students to integrate information across individual lessons and class sessions.

Meaning in school subjects, especially at the secondary level, often resides in the concepts and principles of the disciplines. If skills are isolated from this propositional context and treated as interchangeable parts in the daily scheduling of lessons, then meaning is likely to be lost and students will not acquire flexibility and fluency in using their skills.

Studies of academic work suggest that tasks are shaped by the daily routines of organizational life in classrooms. Moreover, some tasks appear to be more "suited" than others to the activity systems that commonly occur in these settings. In my own work I have found that there are striking differences between tasks involving familiar work and tasks involving novel work. Familiar work is typically organized around routinized work patterns, such as warm-ups in math classes and recurring journal writing segments and spelling assignments in English classes. In addition, familiar work is usually defined quite explicitly, and students are given a great deal of guided practice with problem types. Novel work, on the other hand, requires students to assemble information or processes in ways that have not been demonstrated to them in advance.

When familiar work is being done, the flow of classroom activity is typically quite smooth and well ordered. Tasks are initiated easily and quickly, work involvement and productivity are typically high, and most students are able to complete tasks successfully. When novel work is being done, activity flow is slow and bumpy. In comparison to lessons with familiar work, introductions to novel tasks are lengthy and work involvement and productivity are sometimes low. Indeed, rates for student errors and noncompletion of work are high when novel work is assigned. Finally, students sometimes respond to the ambiguity and risk involved in novel work by negotiating directly with teachers to increase the explicitness of product specifications or reduce the strictness of grading standards. Many teachers avoid struggles over work demands by what might be called anticipatory management of the curriculum. This phase simply means that a teacher excludes novel work from the curriculum or creates a highly familiarized task environment to smooth out possible workplace tensions in advance. In sum, novel work stretches the limits of classroom management and intensifies the complexity of the teacher's task of orchestrating classroom events. In response to these pressures on work flow in the classroom, teachers often redefine or simplify task demands or they reduce risk by softening accountability.

This discussion points to the fact that meaning is often vulnerable in lessons because of the management pressures that shape classroom events. This problem is likely to be especially large in classes of students who lack either the inclination or the ability to do academic work successfully. In such circumstances, the flow of activity is often not smooth and has little power to hold students' attention. Routinized and predictable work, therefore, often "fits" management demands better. At the same time, work that fails to establish a semantic framework that organizes and integrates the pieces of curriculum will not enable students to develop the capacity to do school work independently. Constructing work that adequately represents the curriculum and can be accomplished by students remains, then, a fundamental problem in teaching at all levels, including compensatory education programs. Solutions to this problem will require increases in our understanding of curriculum representations and classrooms.

Conclusion

In concluding, I would like to underscore the central message of these curriculum and instruction papers for compensatory education. These papers make a case that the conventional wisdom of instructional design for compensatory education is wrong. Mastery-type plans with their emphasis on small steps through the content may well prepare students to do well on standardized achievement tests. But serious questions are being raised concerning the validity of this criterion for judging what students know and are able to do. Compensatory students are getting higher scores on standardized tests, but their ability to do school work independently is not improving. These papers suggest that the instructional designs typical of compensatory education fragment the curricular experiences of students and, thus, fail to provide them with the coherent mental representations necessary to do school work. This effect would appear to be especially large when students are grouped apart from their peers for remedial instruction. Under such circumstances, the content and the norms of behaviors in low-achieving groups is clearly not geared to advancement into regular school programs.

If taken seriously, this message calls for a radical revision of compensatory education and a redirection of program efforts at the school level. In particular, we need to shift our emphasis from fragmentation to coherence and from differentiation to integration. Unfortunately, I am not optimistic that such a redirection will occur. There is likely to be considerable compatibility between the operating requirements of Chapter 1, with its emphasis on performance and accountability, and the mastery approach to designing instructional programs. A redirection at the level of curriculum and instruction is likely to require a fundamental change in how Chapter 1 itself is designed and administered.

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PART V: PARENT INVOLVEMENT

PARENT INVOLVEMENT STRATEGIES: A NEW EMPHASIS ON TRADITIONAL PARENT ROLES

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PARENT INVOLVEMENT STRATEGIES: A NEW EMPHASIS ON TRADITIONAL PARENT ROLES

Introduction

Research has consistently shown family background to be among the most important influences predicting a child's performance in school (Coleman et al., 1966; Jencks et al., 1972; Mosteller & Moynihan, 1972). More recent studies have begun to identify the family attitudes and behaviors that mediate these effects (Walberg, 1984,; Hanson & Ginsburg, 1985; Etzioni, 1984). Yet despite the increased knowledge about the importance of the home environment, only a few examples exist of intervention strategies that have succeeded in altering this environment in ways that promote a child's educational development.

This paper proposes a new emphasis on home-based parental involvement, one that takes a realistic approach to the roles accessible to parents of low-achieving children, given potential limitations' on their skills and time. This approach is based on encouraging parents to use everyday activities in the home to develop in their children behavior and attitudes that promote academic achievement in school. These approaches are available to, and have effectively used by all types of parents. This approach differs from that endorsed in past legislation for parents of Title I children.

The Title I program targeted supplemental services on educationally low-performers who resided in low-income areas, in part because these children were considered less likely to have the same educational opportunities at home as other children. This deficit model of the home reflects the origins of the compensatory education program during the "War on Poverty" period in the mid-1960s. Now known as Chapter I of the Education Consolidation and Improvement Act of 1981, the program retains its original purpose.

While Title I largely ignored the natural role of parents as their children's mentor and guardian in the home, it stressed a major role for parents in the school. This school role was more the result of evolving events than of particular provisions in the original legislation. Indeed, the 1965 legislation that spawned Title I simply required parents to generally be "involved" in developing local projects applications.

Initial evaluations of learning gains of compensatory education participants were quite disappointing. However, investigations by the NAACP Legal Defense and Education Fund

(1969) found that recipient schools and districts abuse of the use of compensatory education program could be identified. It was reported, instead, that Federal money flowed for peripheral expenditures such as band uniforms, swimming pools, carpeting principal's offices and building construction.

The extensive abuses of legislative intent led to tighter Federal legislation and regulations that included expanded parental oversight. In 1971, Parent Advisory Councils (PACs) were legislated at the district level. In 1974, the law was changed to require councils at the school level as well, with members of all councils to be selected by parents. Then, in 1978, the legislation specified that "...each local educational agency shall give each advisory council which it establishes. . responsibility for advising it, in planning for, and implementation and evaluation of its programs and projects assisted under this title" Section 125(b), (P.L. 95-561).

Parental oversight, however, was not limited to ensuring only that compensatory education services reached the intended beneficiaries. It also meant that some parent groups were given oversight approval of the curriculum and the budget itself. In 1979, the Systems Development Corporation (Melaragno, Lyons, & Sparks, 1981) found that 60 percent of the district-level committees reviewed or signed off on all or part of the budget.

As parent committees became established, funds were also set aside to pay parents for their time and to finance expenses and trips for parent group meetings. The 1976 study of Title I by the National Institute of Education (NIE) identified assistance to parent groups as the largest single support service expense, outweighing expenses for food, nutrition, health or counseling.

Along with the growth of PACs, the use of parents as aides in the classroom emerged as another type of school-based parent activity. In 1980, case studies at 16 school districts conducting Title I projects, revealed that parent aides were found at 75 percent of the sites (Melaragno et al., 1981).

The duties fulfilled by the parent aides indicated that the most prevalent activities were directly associated with instruction. However, it is not clear that parents of Title I students are most equipped to handle this type of teaching assignment in the school.

The education amendments of 1981 brought about a change in Federal requirements that eliminated the need for local school systems to establish formal advisory councils. This elimination came about as part of general Federal efforts across a number of social programs to return more control over program decisions to local officials. More recently new Department of Education regulations represent a clarification of policies toward parent involvement. Although these regulations list PACs and other school-based strategies as permissible parent activities, the regulations stress a more traditional home-based role for parents.

While there is a legitimate role for school-based activities involving parents, particularly in monitoring compliance with Federal regulations, there are also inherent problems. First, the formation of PACs for a multiplicity of Federal categorical programs, including Title I, is excessively burdensome to school officials. The schools' and districts' solicitation of parental involvement is, at first, time-consuming and then administratively awkward and complex. Even if PACs are successfully begun, the results of parent participation in PACs are not overwhelming. According to the Sustaining Effects Study, only 14 percent of parents in Title I schools were PAC members (Hinckley, 1979).

Second, Federal requirements for the involvement of PACs in program governance activities such as project planning, implementation, and evaluation place low-income parents in a awkward position. While they may be able to judge whether or not their children are learning in school, they may have difficulty making decisions on specific issues of school operations, such as assessing the adequacy of curriculum. Yet the legislated purpose of PACs is for this type of involvement.

The use of low-income parents as Title I aides is also problematic. These parents, who are most likely to have little or no higher education, are being used for instructional purposes. In 1976, it was found that 24 percent of compensatory education instruction was provided by paraprofessionals, compared with only 4 percent of regular instruction (NIE, 1977). In essence, disadvantaged children are being exposed to teachers with far less education than children in the mainstream curriculum. Yet, disadvantaged children are exactly those students who most need professional attention.

Finally, the formation of PACs for parents of disadvantaged children is segregative. While compensatory students spend no more than one-fifth of their school day in Title I activities, by forming a PAC their parents deal only with this fragment of their education and remain isolated from the goings-on of the total school program. Indeed, Title I parents remain insulated from the major parent-school groups, such as the PTA, who are concerned with overall educational quality. Only through parental participation in groups concerned with whole-school progress will the needs of disadvantaged children be met.

This paper examines parental involvement strategies that emphasize traditional home-based activities. Since the environment of low- and high-achieving students often differs in ways that are important for assessing home-based strategies, we begin with a description of the characteristics of low achievers over which parents can exert influence and which research shows can affect student achievement.

Characteristics of Low Achievers Over Which Parents can Exert Influence

There are many reasons why a student fails to learn in school. Some may have to do with a student's innate abilities. Others may have to do with school inputs, such as the quality of teachers, class size, or course content. On the other hand, some causes of lower student performance are related to characteristics over which parents could exert control. As Iverson and Walberg (1982) note, academic ability and achievement are more closely linked to the measures of some process and intellectual stimulation variables than to parental socioeconomic status indicators, and the process variables are "changeable and...merit constructive efforts to improve them..." (p. 151).

These characteristics over which parents could have some influence and which are effective in promoting learning are the ones that we seek to identify in this section so as to point the way for recommendations on appropriate parental involvement efforts. Four characteristics are considered: student values, behavior in school, use of time, and access to educational resources outside the school.

Student Values

Students' values determine what youngsters believe is important in their life. Hence, values establish priorities and direct student energies. Students who have priorities that emphasize success in school will expend the effort required to learn. For others who focus on more immediate pleasures, school work may take a backseat to other activities. Values are learned and students tend to assume the values of those close to them, and hence, parents and friends have much to do with shaping their values orientation.

A recent study (Hanson & Ginsburg, 1985) underscored the importance of traditional values as a predictor of academic achievement. It identified student, parent, and peer values to be important predictors for academic success. Students' values included belief in the work ethic, taking responsibility for one's own actions and religious values. Parents' values focused on their general level of encouragement and concern, attributes which encourage responsible behavior in their children. Peers' values emphasized the importance they attached to education, and thus, reinforce a student's own efforts to succeed in school.

Examining 15,000 high school sophomores, this study found that these traditional values, as predictors of academic success as measured by a standardized achievement test, were twice as important as family economic or educational background. Moreover, the greater relative importance of value characteristics held up when the outcome measure was changed to grades in school or to educational improvement between the sophomore and senior years.

Mayeske's (1973) extensive reanalysis of the Coleman report identified three motivational variables as playing a key role in student achievement. These were student and parent educational expectations of students, attitudes toward hard work and responsibility as antecedents of success, and participation in educational supportive activities in the home. Also, parental encouragement for education has been shown by Sewell and Hauser (1972) to have a "net value" of six-tenths of a year of higher education when other factors are controlled. These authors note the importance for higher education attainment of peer expectations, or having friends who plan on attending college.

Freeman (1985) has found that another value variable--religiosity--is important in affecting the extent to which disadvantaged ghetto youths hold a job when they leave school. He notes that religiosity is not just an indicator of who are "good kids", but that at least some part of the impact is causal.

Recent evidence of the influence which traditional values can exert to enable students to overcome barriers to success is offered in a study of Asian refugees to this country (Caplan, 1985). These families come to this country often with few material possessions, little formal education, and not knowing the English language. Investigation of the correlates of their accomplishments attributed much of the academic success of the refugee children to family values brought from Indochina. The three values rated as most important by 95 percent of the Indochinese families were educational achievement, a cohesive family and a belief in hard work. The author concludes that "these data suggest that cultural values and family centered achievement orientations and strategies can determine high levels of educational achievement, even where income and formal education resources are minimal" (p. 50).

Bloom's (1985) study of the most gifted and talented students in our society confirms the importance of parental reinforcement of students' efforts as a factor for even our best students to succeed. Bloom observed that many of the most successful students were not possessed with unique brilliance. Rather, what distinguished them from others was an enormous drive for success and perfection. The author cites parental support as a major source of this drive. Other research (Weiner, 1973) suggests that even for less able students, extra effort can overcome the handicap of low ability.

The importance of values orientation as a predictor of educational success is particularly significant for participants in compensatory education. These are the kinds of characteristics over which all parents, regardless of their education or income, could exert control.

Behavior in School

Students' behavior affects achievement, and is, in turn, affected by parental input. Students who fail to follow instructions, frequently interrupt class, or are in trouble with the law are not likely to possess the self-discipline to meet academic challenges. Recent research supports the link between poor discipline and low academic performance.

Low-achieving (i.e., lowest quartile) high school sophomores are 60 percent more likely to cut class compared with high achievers, 25 percent more likely to be viewed by their friends as troublemakers, and 20 percent more likely to be in trouble with the law.

A study by Myers, Milne, Baker, and Ginsburg (1986) demonstrated that misbehavior among sophomore students had negative effects on their grades as sophomores. Further, misbehavior affected the learning that occurred between sophomore and senior years; this is an important finding in demonstrating that student misbehavior is causally connected to lower achievement. In case studies of low-achieving, poor ghetto children, Clark (1983) observed that "rules for household conduct, when they exist, tend to be nebulous and contradictory or sporadically enforced" (p. 194).

Lack of discipline has consequences that are not limited to the problem student. Learning does not effectively take place in a climate of fear or when there are frequent classroom disruptions. Moreover, it is the disadvantaged student who is the most likely victim. For example, Blacks and Hispanics were more than twice as likely as Whites to be the victims of serious assaults at school (NIE, 1978). Equal opportunity for minorities should include the right to attend orderly schools.

Thus, parents and students have good reason in judging school discipline as a major problem confronting our schools. In 16 of the last 17 Gallup Opinion Polls (Gallup, 1985), parents ranked lack of school discipline as their number one problem. When Goodlad (1982) surveyed junior and senior high school students as to their "one biggest problem," student misbehavior was listed number one by junior high school students, and alcohol and drug use--a related problem-- was rated first by high school seniors.

Research has connected a student's lack of discipline problems with the values described above, and with parents' influence on these values. Hanson and Ginsburg (1985) found that students are less likely to be a discipline problem if they hold positive values related to personal responsibility, religion, and high educational expectations, if their parents are concerned and monitor their behavior, and if they choose friends who value education. Thus, promoting positive values in children is also an important strategy for controlling misbehavior.

It is a strategy open to all parents. Earlier researchers (e.g., Cloward & Ohlin, 1960) suggested that the poor socialization and academic deficiencies brought to school by lower-class students made them more prone to fail in school and then to become behavior problems. Later research (Polk & Halferty, 1966) found surprisingly little class difference in the backgrounds of delinquents and non-delinquents. Coleman (et al., 1982) notes that "the family structure and authority has clearly weakened in recent years...there appears to be a reduced interest on the part of parents in regarding their adolescent children as full members of their family subject to their attention and authority, and a reduced willingness on the part of adolescents to being subject to family constraints and obligations" (p. 190). Parents can take active measures to reverse this trend.

Students Use of Their Out-of-School Time

One of the robust findings of the school effectiveness literature is that the amount learned is related to the time classrooms devote to instruction and that substantial differences in learning time take place among schools and classrooms. Analogously, the amount students learn can be related to their effective use of time out-of-school.

As early as 1967, Rankin found when comparing high-achieving students and low-achieving students that particular parental behaviors at home and in connection with the school differ significantly between these groups. Parents of high-achieving students initiate more contact with their childrens' school, provide a wider variety of experiences for their children, and engage in activities encouraging achievement such as helping with homework and talking about school. These characteristics of successful families have been documented by others (Smith, 1968; Clark, 1984; Walberg, 1984) in both single- and two-parent homes and in poor- and middle-class families whose children do well in school.

It seems likely that parents can help their children's academic success through exercising control over their leisure time by curbing television viewing and encouraging homework, reading and conversation.

Television. Television viewing is not necessarily detrimental to learning. Younger children learn vocabulary and, depending on the programs watched, students can learn about the surrounding world. Problems occur when television watching becomes excessive so that television becomes the primary source of out-of-school knowledge and interferes with more productive uses of time. In view of this, it is disturbing that the National Assessment of Educational Progress (NAEP; Department of Education, 1985) found that a full quarter of 9-year-olds watch more than 6 hours of television per day. In general, television viewing in excess of two hours a day is considered detrimental to school performance. Data from the Sustaining Effects Survey (SES) of 12,000 nationally representative elementary school students, grades 1 through 6, demonstrate that elementary school children who watched four or more hours of TV per day had an 80 percent greater chance of falling into the lowest rather than the highest quartile of reading achievement.

Television fosters a learning process built around rapid but brief presentations of information rather than sustained concentration on material required for an in-depth understanding of topics. At the preschool level, Elkind (1986) suggests that "the rapid presentation of material" on programs such as "Sesame Street" and the "Electric Company" is much too fast for the information processing abilities of young children. These programs, he proposes, "have amplified the attention limitations of young children," with negative consequences for their reading abilities in later life. Similarly, Postman (1986) observes that TV, with its emphasis on visual scenes to provide information with frequent commercial interruptions, discourages development of sustained and critical thinking skills.

Reading. Reading is basic to all learning. It is also a subject that is easily practiced at home. The Department of Education's recent report, Becoming a Nation of Readers (NIE, 1985) emphasized the importance of leisure reading. For example, their study of fifth graders found that 50 percent read books for an average of only four minutes a day, but devoted 130 minutes to viewing television. Reading at home works to improve reading achievement scores. To illustrate, an analysis of 12,000 nationally representative elementary school students in the SES study (Milne, Meyers, Rosenthal, & Ginsburg, in press) estimated that an hour of reading at home each day would increase reading achievement scores by about one-fifth standard deviation (up to 6 percentile points), after controlling for family structure and economic and educational variables.

Becoming a Nation of Readers speaks directly to children and parents recommending that:

- Children should spend time in independent reading. Independent reading, whether in school or out of school, is associated with gains in reading achievement. By the time they are in the third or fourth grade, children should read independently a minimum of two hours per week. Children's reading should include classic and modern works of fiction and nonfiction that represent the core of our cultural heritage.

- Parents should support school-aged children's continued growth as readers. Parents of children who become successful readers monitor their children's progress in school...buy their children books or take them to libraries, encourage reading as a free time activity, and place reasonable limits on such activities as TV viewing.

Hewison and Tizard (1980) found that children of working-class parents who listened to their children read at home had significantly higher reading performance at ages 7 and 8 than children whose parents did not listen to them read. Following up on this research, Tizard, Schofield, & Hewison (1982) found significantly greater gains in reading performance for children ages 6 and 7 whose parents listened to them read at home daily compared with a group receiving extra tutoring in school and with a non-intervention control group. This effect was observed for all ability levels of reading.

Homework. Homework provides students with extra studying. The U.S. Education Department's What Works (1986) concludes that when low-ability students do 1 to 3 hours of homework a week, their grades are usually as high as those of average-ability students who do homework. Similarly, when average-ability students do 3 to 5 hours of homework, their grades usually equal those of high-ability students who do no homework. Further, Walberg (1984) estimates that homework that is graded and commented upon can have three times the effect that socioeconomic status has on learning. Homework that is merely assigned can have an effect on learning comparable to socioeconomic status.

However, time spent doing homework is a complex variable to understand. First, simply giving students homework is not nearly as valuable as when it is accompanied by feedback from the teacher (Walberg, 1984). Also, less able students may spend more time doing homework because they have greater difficulty doing the assignment.

Conversing. Parents taking an interest in their child's activities and talking about them seems to be an important factor in enhancing student achievement for both high and low achievers. Indeed, research focusing on National Merit Scholars showed they all shared only one common characteristic--almost every evening at dinner with their parents, they discussed world events. Clark's (1983) study of low achievers' homes observed that parents found time for television, "but seldom hold family dialogues, except during arguments" (p. 195).

Building on the findings of Becoming a Nation of Readers (1985), What Works (1986) ties reading with conversing. "Reading instruction builds on conversational skills. To succeed at reading, children need a basic vocabulary, some knowledge of the world around them, and the ability to talk about what they know. Conversing with children about the world around them will help them reflect on past experiences and on what they will see, do, and read about in the future" (p. 15).

It appears that such family routines as regularly scheduled meals provide opportunities for family interactions and discussions that promote learning. Benson, Medrich, and Buckley (1980) note that family members eating together seems to enhance achievement for students from low socioeconomic status families.

Resources That Can Promote Education

One of the deficits historically perceived as being associated with need for compensatory services is a lack of resources in the home. These resources include both human and material inputs that could promote learning. While some resources may not be available to families of compensatory education students, research has shown that academic achievement is related to other resources that are available to all families.

Books in the home. A number of studies have shown the importance to achievement of having books and other reading materials in the home. The Reading Report Card (NIE, 1985) notes that "relationships between available reading materials and reading proficiency are as notable as those for level of parental education" (p. 50). Other studies (e.g., Milne et al., in press) have shown that, for nationally representative samples of elementary and high school students, reading and mathematics achievement are both related to the number of books in the home. For example, an elementary student in whose home there are no books at his/her reading level is 15 times more likely to be in the lowest quartile than in the highest-achieving quartile; conversely, a child with 50 or more such books is 5 times more likely to be in the highest-achieving than in the lowest-achieving quartile.

Libraries and museums. Access to libraries and museums can also support achievement. As Heyns (1978) found, both proximity to, and regular use of, a library were correlates of summer learning or achievement. Both variables were to some extent proxies for number of books read or time spent reading (and effects therefore diminished when such controls were exercised). However, Heyns found distance to library from home related to number of books read, thus indicating that access to a library exerts an independent influence over reading. Thus, while we have no information on the trade-offs between books in the home, and books from the library, both clearly can contribute to achievement.

Benson et al. (1980) also note that family visits to area cultural centers (museums, aquariums, etc.) are correlated with achievement across sixth graders. However, the achievement of lower income children did not benefit from such visits.

A place to study. The high achievement of Japanese children has been largely attributed to their parents' intervention in stimulating and encouraging the child to learn at home (Sava, 1985). One of the most important practices of Japanese parents is to create a learning atmosphere. For example, home-study desks are purchased when children are very young (3 to 5 years old). All models of these desks have a high front and sides that minimize distractions. There is a built-in study light, shelves, a clock, electric pencil sharpener, and calculator.

Studies in the U.S. have recognized the importance of providing children with a place to study. Smith (1968) reports greater achievement gains among elementary school children whose parents employed methods such as providing a time and place at home for the completion of homework.

Parents as educational resources. The usefulness of parents as educational resources for their children depends in part on parent attributes and characteristics, not all of which are subject to manipulation nor available to parents of disadvantaged students. It is for this reason that we suggest that, for this target group, parent activities in direct educational instruction with their children should not be emphasized as the sole or even primary method of parental involvement.

There is a wealth of literature on the relationship between family socioeconomic status--particularly income and education--and student achievement (e.g., Coleman et al., 1966; Jencks et al., 1972). The recent challenge for researchers has been to determine how these effects are mediated--through which parental actions on family processes the effect takes place. In particular, authors dealing with human capital development (e.g., Leibowitz, 1974, 1977; Goldberg, 1977) point out that there are a number of mechanisms through which these family demographic variables affect educational outcomes. One is inheritance of intellectual ability, not a manipulable characteristic. A second may be the absence of a father, which reduces material and human resource availability. A third is through the greater efficiency of the better educated mother as a teacher of her children (Goldberg, 1977), affected in part by the fact that mothers spend four times as much time with children as do fathers (Leibowitz, 1974). These are all mechanisms which would appear to be primarily available to parents of higher socioeconomic status.

However, as many authors have noted (Walberg, 1984, 1981; Bradley & Caldwell, 1977; Hanson & Ginsburg, 1985) these family socioeconomic and structure variables can often be shown to account for less of the variance in school achievement than family process or environmental variables. Henderson (1981) cites the various reanalyses of the Coleman data as supporting a "subtle but compelling argument for parent involvement." Less subtle and more compelling are the numerous studies cited in previous sections of this paper supporting the fact that there are behaviors available to all parents that can make meaningful contributions to educational achievement. These behaviors involve parents' time use, parents' monitoring of their childrens' time use, and parental inculcation of values.

How the School Can Help

What used to be considered as basic obligations that parents had to fulfill in order for their child to develop and be educated--the teaching of values, respect for authority, etc.--can no longer be taken for granted. As James Coleman noted in his 1985 Ryerson lecture at the University of Chicago, "Traditionally, the school has needed the support and sustenance provided by the family, in its task of educating children. Increasingly, the family itself needs support and sustenance from the school--and through the school, from the other families with children in the school--in its task of raising children."

The underlying reasons for the weakening of family support mechanisms are fairly apparent. First, Coleman has suggested that parents have less self-interest in investing the personal time and financial resources to promote their children's development. Children are less important as both parents have become more career oriented, work longer before having a family, and are less dependent upon children for financial support after retirement. Second, the rise in one-parent families and the related increase in proportion of children from families in poverty mean less home resources to invest in children. Third, the dominance of television as a leisure pastime has eroded traditional parent-child contact through conversation and other family activities. While parents remain their child's first and primary educator, this role has largely been ignored by professional educators.

Coleman (1985), who recognizes this problem, proposes to "use the schools to strengthen the family's capacity to raise its children; in the ghetto and the suburbs, it implies active involvement of the school in helping to strengthen the norms that parents hold for their children..." (p. 22). Schools should also take initiatives to help parents support their child's educational development at home.

The schools have been quick to blame parents for failure; U.S. teachers say the biggest problem facing the schools is "parent lack of interest and support" (Gallup, 1984). Nevertheless, the schools have not done their part to reach out and help those parents who want to become involved. Dorothy Rich (1985), based on her extensive experience in home-school development programs, describes what she terms "a teacher's pitfall." The common complaints from parents are: "Teachers don't listen to us." "They feel we have nothing to offer." "They don't respect us." (p. 14). In essence, teachers and school officials will need prodding and help if parent involvement is to be successful.

This section considers what schools and communities could do to foster a realistic approach to parent involvement.

Teaching Values

Today, the teaching of fundamental values--honesty, integrity, responsibility, and the work ethic--in the public schools is controversial. Foes argue that in our modern technological and pluralistic society, the idea that absolute standards of conduct can guide behavior is an anachronism. They believe that the only supportable curriculum in today's modern world seems to be a value-free curriculum. The aim of this educational philosophy is to adapt to the different viewpoints embedded in our pluralistic society by creating a pedagogy in which all values are personal and relative.

This approach is not succeeding in its lofty aims of improving our understanding of and ability to deal with complex social issues. The basic premises on which it is built are flawed--that education should be value-free; that students are able to evolve their own concepts of right and wrong without adult guidance; that a value-free education is unbiased in its presentation of issues; and, that this form of instruction promotes higher-order thinking and reasoning.

The stark truth is that the transmission of cultural values by our schools has historically characterized American education. From the 19th century McGuffey's Readers to the 1948 NEA handbook, children have been taught to read and write through poems and rhymes, riddles and essays that stress personal and civic virtues. As Honig (1985) noted in his recent book Last Chance for Our Children, "...these texts were on to something--the power of stories to edify as they entertain..." (p. 10).

The public schools can provide that help again. As Honig noted, "Indeed, that may be their unique and essential purpose in the United States--to bind together a diverse and pluralistic society by disseminating the guiding morality that inheres in our best literature and history" (p. 107).

Recent surveys indicate that the American public recognizes that the teaching of fundamental American values belongs as an integral part of a normal education curriculum. When questioned by the 16th Annual Gallup Poll (1984) of the Public's Attitudes Toward the Public School on the goal of education, the highest rated response next to "speaking and writing correctly," was "to develop standards of what is 'right' and 'wrong'." An earlier Gallup Poll (1983) revealed that 79 percent of Americans favor public school instruction that deals with ethical and moral behavior; among parents of public school students, 84 percent favored the teaching of values in their children's schools.

The school's need to respond to this is imperative. They need to bring a message to their students that is consistent with the values they learn in the home--respect for authority, the virtue of hard work and the worth of self-discipline.

And this does not mean that schools need to create a course entitled "Values Education." Rather, schools must teach in the classroom values through stories and studies in history, literature and civics. Schools can undertake policies, such as they recently adopted by the California system, to teach the classics. There the ideals of civilization can best be illustrated.

What's Expected of Students

Along with teaching students about the importance of basic values related to standards of conduct or ideals, schools must put these values into practice. Students must know what's expected of them and they must be held responsible for their behavior. Moreover, parents need to know what schools expect of their children so that they can reinforce these expectations at home.

Codes of school conduct are not a novel idea, but they have in recent years become more of a legal document to protect a school system and its employees against law suits instead of a simple statement of the schools' expectations for its students. For example, the Boston Safe Schools Commission (1983), established to reduce high rates of violence and disruption, concluded "there must be a greater clarity in Boston about what behavior is expected. The intent of the present Code of Discipline has not been well enough understood or communicated, in large part because it is too lengthy and technical in its language" (p. 17).

In addition, codes of school conduct should be comprehensive in scope and cover expectations regarding academic as well as disciplinary conduct. It's not sufficient that a student simply show up at school and not cause trouble to pass. Students and their parents need to know that they are expected to work hard at their academics. Past pressures for social promotions in schools have discouraged clear communication of academic expectations.

An acceptable statement of a school's expectations for its students should, therefore, have at least the following four characteristics: (1) clear statements of what is expected written in simple but specific language; (2) rules of conduct covering such behaviors as attendance, classroom conduct, drug use, and assaults and thefts; (3) expected academic conduct covering such activities as average amount of homework, completion of assignments, and amount of outside reading; (4) definite and consistently enforced penalties for misconduct.

A statement of expectations for students is of little help to parents if they are unaware of such statements. Unfortunately, studies show that a majority of parents are unaware of the nature of such statements. Schools not only must make efforts to ensure that parents receive statements about school policies but that these statements are read. Some schools, such as in Buffalo, New York, have had greater success in achieving parental awareness through requiring students to return a signed parental pledge that they, as parents, will reinforce at home, the schools' expectations for student academic and discipline behavior.

What's Expected of Parents

Home-based parent involvement strategies must be realistic in what they set out to accomplish. They should establish a set of roles that a responsible parent will carry out. These are responsibilities that focus on attitudes and behaviors. Some potentially worthy activities, especially those involving direct parent-child instruction, are simply not ones that we could expect most parents to undertake. Too few parents are willing or have the time required and, beyond the early elementary grades, many parents may not have the knowledge.

We previously identified a list of parent responsibilities in the home that we propose schools emphasize. They are supported by research and are akin to the activities that a parent would normally carry out in fulfilling their duties as their child's guardian. Examples included instilling children with a sense of worth and importance of accomplishment, promoting good discipline, and monitoring their child's use of time.

Schools can provide specific guidance as to what parents should do in each area through four types of strategies. One is to establish a set of specific everyday activities for parents to do to reinforce their children's learning. The list would include ensuring completion of homework, conversing about school activities, limiting a child's television viewing, or encouraging the reading of books, activities which all parents can manage and which research has demonstrated proves effective. Having the parent sign homework and keep a daily checklist of their accomplishments in other activity areas represents a simple mechanism by which many schools foster home-based involvement.

The Jacksonville school district implements an "everyday" activities strategy. At the beginning of the school year a "back-to-school-night" is hosted by the district. Parents are given an orientation where they are told of their responsibilities and where they receive a year-long calendar marked with major school and district events. In addition to these events, the district marks suggested activities to do with the child. The calendar is grade-specific, based on the age of the parent's child and the activities are coordinated with the curriculum. For example, if the child is studying nutrition, then the parent is encouraged to take the child to the grocery store to study nutritional labels on the groceries.

For the summer months, the American Federation of Teachers has prepared a summer calendar for parents. Each day on the calendar suggests an activity that parents can do with their children to supplement their schooling.

Parents will also need *encouragement to get involved*. Many parents, especially those who lack substantial schooling, may find the school a frightening place. Others haven't realized the importance. Honig (1985) reports on some Oakland public schools that increased attendance at parents back-to-school night primarily by running "parent participation programs like a political campaign. In English class, students wrote invitations to parents asking them to attend. Teachers manned the contests. Contests were held pitting one class against another, with each one having the highest parental attendance rates earning ice cream sundaes (p. 168). The result was that parent attendance at back-to-school night increased from 15 to 45 percent. To boost attendance at parent-teacher conferences, volunteer parents called up those who initially failed to attend. Attendance jumped to 65 percent. To maintain lines of communication, teachers sent home weekly progress reports with their children's work that parents had to sign.

Parents may also need *help*. Teacher homework hotlines (Fairfax County, Virginia; Indianapolis, Indiana) in which teachers are available to answer phone questions respond to an immediate need for information. However, a more basic and continuing need for assistance is suggested in Joyce Epstein's surveys of first- , third- and fifth-grade parents and teachers in Maryland school districts. Four-fifths of the parents said that they could spend more time "helping their children at home if they were shown how to do specific learning activities." Further, the study showed that teachers can be effective. Parents of students whose teachers emphasized parent involvement were more likely to feel they should help their children and to receive most of their ideas for home involvement with teachers. Dorothy Rich has developed and successfully tested an extensive set of ideas to assist parents in helping their children at home through everyday activities.

While parent contact with the school is too often associated with negative experiences—your child is in trouble, please come to school—parents must *accept their share of responsibility for their children's improper conduct* or failure to otherwise meet their obligations. Some districts are requiring parent attendance at school as a condition for reinstatement from expulsion. In the case of controlling student drug use, Anne Arundel County has found remarkably effective a policy that requires parents to come to school to co-sign an anti-drug use pledge with their child and to co-participate in a drug counseling program.

Conclusions

While the role of the Federal government in parental involvement has changed, over the years policy makers have not backed away from their belief in the importance of parents in educating their children. Secretary Bennett has made parental involvement one of his major priorities, and the Department of Education is providing leadership, supporting research, disseminating findings, and working through such Federal programs as Chapter 1 and Title VII by issuing parent involvement regulations.

While the regulations deal in part with the more traditional activities of school districts related to parents-- notification of a child's selection, establishing parent advisory councils, etc.-- they also speak to other practices. Thus, it is pointed out that school districts may want to consider supporting parents by:

- informing parents of the specific instructional objectives for the child;
- reporting to the parents on each child's program;
- providing materials and suggestions to parents to help them promote the education of their children at home; and
- consulting with parents about how the school can work with parents to achieve the program's objectives.

In a recent speech before the Annual Meeting of Networking Community-Based Services, Secretary Bennett stated, "Above all, I think it is now the job of the Federal government to help recreate the social and cultural fabric that used to give families support in raising children."

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INVOLVING PARENTS IN THE SCHOOLS: LESSONS FOR POLICY

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INVOLVING PARENTS IN THE SCHOOLS: LESSONS FOR POLICY

Deliberate, organized efforts to involve low-income parents or the parents of educationally disadvantaged children in public education are little more than twenty years old (Lareau 1986). Whereas the middle and upper classes long have had both implicit avenues for involvement--their ready and comfortable access to teachers and administrators--and explicit means of participation--Parent Teacher Associations, for example--less advantaged parents traditionally were unable or unwilling to utilize these modes of participation (see Schlossman, 1976).

All of this changed significantly in the mid-1960s as educators and policy makers converged on parental involvement as a promising way to improve educational outcomes for poor or underachieving students and developed multiple strategies to promote the participation of their parents.

The variety of parent involvement mechanisms and policies pursued in the past two decades differ substantively, strategically, and in their intended effects. These diverse experiences provide means to examine the operation of various modes of parent involvement and the extent to which they met their somewhat different objectives. This paper undertakes such a review as a way to inform current deliberation about policies to involve parents in the schools, especially parents of economically or educationally disadvantaged youngsters.

Modes of Parent Involvement

Strategies developed to involve target parent groups in the schools take two broad forms. One is largely advisory and structures parental involvement through advisory councils at the school or district level. The second is collaborative and casts parents as partners in their youngsters' education; this mode pursues various methods for enhancing home/school cooperation.

Advisory roles for parents generally have been tied to Federal parent involvement mandates. Congruent with the celebrated call for "maximum feasible participation of residents of the community served" in Title II of the 1964 Economic Opportunity Act (P.L. 88-452), Congress initiated parent participation requirements in education programs in 1964 with the passage of Head Start. This Federal education initiative was followed by the massive Elementary and Secondary Education Act (ESEA; 1965), Follow Through (1967), the Bilingual Education Act (1968) and the Education for All Handicapped Children Act (1975). All of these major Federal education programs required that parents of community members play a role in program development and implementation at the local level.

Organized attempts to develop partnership roles for parents, in contrast, generally have been a product of university-based development efforts in compensatory education (see, e.g., Gordon, 1970; Gray, 1966; Karnes, 1969; Weikart, 1969) or the result of individual interests, policies and initiative at the local level (see, for example, Berger, 1983; Epstein, 1984). Two types of partnership roles have evolved. One is school-based and solicits parent participation as classroom aides or school volunteers. The other is home-based, engaging parents as tutors for their children. While these partnership efforts have been developed outside the policy arena, it has been the existence of a plethora of Federal and state categorical programs that has provided most districts with needed funds to carry them out.

Why Involve Parents?

What substantive or strategic rationale underlies these parent involvement approaches? Advisory and partnership models share common premises: That low-income parents have fewer resources to apply to their child's education (Lareau, 1986); that minority parents are less able or equipped to participate in mainstream activities (Deutsch, 1967; Becker & Epstein, 1982); that there are critical social-class differences in parent-school relations that disadvantage low-income parents (Ogbu, 1971; Connell, 1982); that educators see lower-class parents and their youngsters differently and less positively (Lightfoot, 1978; McPherson, 1972; Amato, 1980).

However, the strategic differences in advisory or participatory approaches also signal different diagnoses of the underlying issues. Parent advisory councils were mandated primarily to give increased political clout to low-income parents. Reformers such as Robert F. Kennedy believed that political poverty was as detrimental as economic poverty for the success of many Americans. Reformers argued that the economically disadvantaged needed additional voice or power as well as financial resources if educational programs responsive to their needs were to be developed (see also Davies, 1971). In this view, schools failed to serve the poor because their special needs and interests were not heard and attended to. Consequently, Congress included a community involvement requirement in the billion dollar Title I of the 1965 ESEA. The mandated involvement of parents, it was hoped, would make the institutions that served them more accountable. Further, Congress expected that mandated participation through advisory councils would also make federally supported compensatory education programs more effective because they would be based on better information--information supplied by parents--about appropriate programs for low-income youngsters.

Partnership models draw their primary rationale from the research which points to the central role of the family in a child's academic career (e.g., Jencks et al., 1972; Coleman, 1966; Bloom, 1964; Marjoribanks, 1979) and the necessary inter-institutional interaction between school and family (Bronfenbrenner, 1979; Leichter, 1974; Litwack & Meyer, 1974; Rich, 1985). This emphasis supports a different direction of influence and communication. Whereas advisory strategies focus on parents informing the schools, partnership initiatives emphasize the value of participation as a way for the schools to inform parents and build on the centrality of the home to educational outcomes (see, e.g., Rich, VanDien, & Mattox, 1979).

Involving parents as aides or volunteers in the classroom presents the opportunity to learn about classroom routines, teachers' expectations and school goals. This learning is expected to promote development of the mutual expectations, congruence of values and knowledge often lacking between low-income parents and educators (e.g., Comer, 1982; Bronfenbrenner, 1974; Strodbeck, 1958; Seeley, 1984) and to promote the sustained and meaningful support of parents for the schools (Gordon, 1979; Keesling & Melaragno, 1983; Rich & Jones, 1977).

Involving parents as home-based tutors extends this rationale of parent information or training to focus on the parent-child relationship and the importance of active parental interest in their child's education. Involving parents as tutors not only provides valuable practice and skill-building for youngsters but it also is a powerful signal about the importance of education and parent support for the schools.

Consequences of Parent Involvement

How effective have these various strategies been in meeting their objectives? Parent advisory councils receive mixed reviews. The general conclusion appears to be that parent councils have not been successful either in awarding more effective power to parents or in contributing to the design and implementation of more successful compensatory education programs (see e.g., the review prepared by Tangri & Moles, in press).

The comprehensive study of Title I carried out by the National Institute of Education (1978) found that parent council members regularly participated in needs assessment, planning, and evaluation in just one-half of local projects, in spite of Federal regulations requiring such involvement. In the most comprehensive study of parental involvement activities under Title I, Melaragno, Lyons, and Sparks (1981) found that the majority of parent councils did not participate in any form of decision-making. While more recent survey research has demonstrated somewhat higher levels of participation in central programs decisions (Advanced Technology, Inc., 1983), case study analyses have shown that "participation" in many districts consists of little more than providing perfunctory input into detailed plans previously developed by administrators (Melaragno et al., 1981; McLaughlin, Shields, & Rezabek, 1985; Shields & McLaughlin, in press).

These general conclusions mask the great variability in parent council activities across districts, however. Studies of parent involvement in compensatory education programs have consistently found a broad range of participation patterns. While parent councils in many districts have existed primarily on paper or acted solely as rubber stamps for administrators' decisions, in a significant number of communities parents are actively involved in the planning and implementation of the program activities. In these districts, there is evidence that a number of reformers' expectations were realized. Melaragno et al. (1981) found positive effects on both program and students in districts where parents were actively involved in the decision-making process. In our own work, we have found districts in which parents have played a major role in decisions ranging from the choice of appropriate reading materials for minority students, to the targeting of services on particular grade levels, to the use of particular pedagogical techniques by teachers--decisions which parents, teachers, and administrators agree led to better compensatory education services (Shields & McLaughlin, in press).

While significant and positive influence on program practice appears to be a rare result of parental activities, important bureaucratic and political benefits are enjoyed by many districts which have established regular and systematic channels for parent involvement. Bureaucratic benefits are paid in terms of the ready mechanism provided by parent advisory councils to structure community conflict, to channel that conflict into a mechanism under the auspices of the school district (McLaughlin et al., 1985; Shields & McLaughlin, in press). In one New York district, for example, a compensatory education council was established before the Federal requirement was codified in order to deal with a group of minority parents who had physically taken over a school. To this day, the parent council is actively involved in many district decisions, including the development of a magnet school program to desegregate the district. The same pattern was repeated in a rural California community, where the district established a well funded council to provide an organized forum for the concerns of a group of protesting Hispanic parents.

In cases of intense conflict between the community and the schools, the incorporation of protesting groups into the normal decision-making process has added political benefits. Administrators in these districts report that community protest is lessened as parents come to understand the difficulties of developing and implementing effective programs. At the same time, such participation defuses potential future conflicts by ensuring that program decisions are designed to meet the needs of the community (Shields & McLaughlin, in press). Even in less conflictual districts, political benefits can be seen in the increased political support for the schools associated with an active parent council. In these districts, administrators have found organized parent groups to be powerful political allies. For example, one Missouri administrator, commenting on the continuation of the district's parent advisory structure even after Federal requirements had been eliminated, noted that the parent council had been "instrumental in selling our program to the general community" (McLaughlin et al., 1985, p. 151). Or, an Alabama district has successfully utilized its parent advisory council to lobby for compulsory state kindergarten and to circulate petitions against proposals calling for tuition tax credits for private schools.

Given the expected educational, bureaucratic, and political benefits of organized parent councils, why have studies consistently found many districts with little effective involvement? The nationwide study conducted by the National Institute of Education (1978) concurred with the analysis of the Lawyers' Committee for Civil Rights under Law (Silverstein & Schember, 1977) that ambiguous Federal regulations were to blame for the broad variability in parent activities in local projects. Yet, studies carried out after the enactment of the very specific Title I amendments in 1978 found similar variability (Advanced Technology, Inc., 1983). The NIE study as well as the in-depth analysis of parent activities by the Systems Development Corporation (Melaragno et al., 1981) pointed to administrators' attitudes toward the value of parental involvement and the steps local districts have taken to facilitate such involvement as key determinants of parental activities.

Our most recent study confirms these findings (Shields & McLaughlin, in press). Compensatory education administrators who value parent involvement tend to run programs in which parents exert a high degree of influence over programmatic decisions. We also found negative relationships between the extent of parent involvement and administrators finding participation requirements burdensome and believing parents to be apathetic.

Similarly, districts with high levels of involvement had established numerous mechanisms to support parent involvement activities--these districts were characterized by organized inservice training, by opportunities for conference attendance, and by the existence of district- and school-level administrators charged with facilitating parent involvement.

While parent and staff attitudes and district structures are clearly associated with variance in parental involvement activities, our in-depth case study analyses point to the community context as the overriding determinant of parental participation patterns (Shields & McLaughlin, in press). Due to economic and demographic factors, certain communities have attracted and supported specific minority groups. Characteristics of these groups, their size, stability, and the extent of their organization establish the specific context for parent activities in the schools. The type of staff hired to work in the schools, this staff's attitudes toward the value of community input, and the extent to which the district has worked to facilitate parent involvement are all related to the relationship between these groups and the schools.

In those districts where a sizeable and stable minority group has confronted the schools through protest activity, organized channels for involvement through the Title I and Chapter 1 programs has worked to the advantage of both the administration and the community. In districts where an unstable and unorganized minority group has never, or only occasionally confronted the schools, administration officials have found the parental advisory requirements to be burdensome and potentially threatening. Finally, in those districts in which community/school relations have remained cooperative (frequently ethnically homogeneous communities), the parental involvement activities have been perceived as a burdensome and wholly unnecessary compliance exercise.

Results from partnership approaches are mixed as well. Evidence is consistent that, whatever its benefits to middle and upper income parents, a school-based partnership model (classroom aides, volunteers, room mothers, etc.) is not always effective for low-income parents. Low-income parents are reluctant to become involved in school activities, don't see school-site involvement as especially appropriate, and further, have difficulty finding time for these daytime activities given the press of job and childrearing responsibilities. Some commentators note the ironic result of school-based partnership models from the perspective of low-income parents. These strategies actually can increase the disadvantaged status of low-income parents relative to their more advantaged peers (see Toomey, undated a). The inequality widens because participating middle-income parents often gain knowledge and mutuality of goals, as planners hoped, while non-participating lower-income parents do not.

Evidence on this point, however is inconsistent. While the Australian studies reported by Toomey found that middle-class parents benefitted, thereby increasing the differences between them and the lower-income parents, Epstein (1984) found that parent involvement at the school site did not affect significantly parents' (largely middle-class) responses to the school program or evaluation of teachers' qualities. Examining these data, Epstein (in press, p. 19) concludes: "(i)nvolvement of parents at school may help teachers or administrators fulfilling their teaching and other duties, but does not affect most parents attitudes and reactions to the school or teacher."

Involvement of parents as home-based tutors, in contrast, appears to provide multiple and direct benefits for low-income parents, youngsters and their teachers (Seeley, 1984; National Education Association, 1985; Tangri & Moles, in press). Parents who have taken on a tutoring role report that they understand more about the school--its programs, goals and expectations--that they feel more comfortable approaching their child's teacher, and that their parenting role has been enhanced. For example, Epstein (in press) finds clear and measurable effects of parent tutoring on parents' awareness and understanding about school.

There is strong evidence that these parental efforts pay off for students. Epstein (1984) reports consistent and enduring gains in students' reading scores as a result of parent tutoring activity. Earlier studies (e.g., Rich, 1976; Goodson & Hess, 1975) also underscore the value of involving parents in a tutorial mode as a way to raise the academic achievement of low-income youngsters. Further, Epstein (1983, p. 43) finds that active home-based strategies are successful in obviating the fall-off of parent involvement as children move up through the grades. Whereas parents of all social classes tend to reduce their school-based involvement as well as their involvement at home as their children move out of the primary grades, parent interest and participation can be sustained despite grade level through some home-based activities.

Benefits of home-based activities are evident at school, too. Teachers say that they gain valuable insights about their students and their home environment, especially when home visits are part of the tutoring effort. For example, one teacher commented that a single home visit early in the school year provided "six weeks of knowledge" about the child--knowledge that enabled her to be a more effective teacher (Epstein & Becker, 1982, p. 110).

Despite the apparent benefits associated with home-based parent involvement activities, the extent to which they occur depends upon the interest and the initiative of particular teachers (Epstein & Becker, 1982). Where teachers take leadership and responsibility in establishing and supporting a parent partnership in the home, the positive results reported are seen. However, most teachers have limited interest in such activity, believing that low-income parents cannot or will not participate in their child's academic work or, further, that their participation (even if forthcoming) would not pay dividends for the student. For example, Epstein (1983, p. 1) found "...teachers who did not use parent involvement tended to believe that parents with less education could not or would not assist with learning activities at home." Epstein also found that teacher attitudes about the value of parent involvement could be influenced by increased exposure to parents with a low level of education. Her data show that increased parent involvement in the school is associated with an increased belief in and focus on parent involvement in the home.

Thus most teachers apparently conclude that investing effort in home-based partnerships is not worth their time. The chicken- and-egg problem associated with advisory councils emerges here too. That is, teachers who think low-income parents can play a meaningful role in their child's education take the initiative to support that role; those who don't, won't.

In summary, school-based parent involvement strategies appear to have limited direct value for low-income parents, whereas strategies such as parent tutoring, which move the site of interaction to the home, seem to yield positive outcomes for all participants, students, parents and teachers.

These findings thus belie the conventional wisdom that low-income parents are neither willing nor able to take an active, substantive role in their child's education. They also point to the importance of involvement strategies that reach out to low-income parents, instead of assuming parental initiative.

This is understandable when we consider that interaction between home and school, between parent and teacher, is a constructed reality which necessarily reflects the attitudes, beliefs and knowledge of each party. Low-income parents are less likely than are their middle-class counterparts to feel welcome at the school site, to feel that they have something of value to offer, or to feel that their voice in educational discussion is legitimate (Lareau, 1984). Because of these attitudes and beliefs, involvement strategies which require parents to take the initiative, or which locate the site of interaction at the school, predictably have been unsuccessful in involving low-income parents. They are involvement practices played almost entirely by the "rules" of the school or educators. Home-based strategies, in contrast, function according to the rules of low-income parents--they focus on their child, they locate the interaction in the home, they build parents' skills and confidence as participants, they accommodate the demands on the time and energy of low-income parents (Toomey, undated b; Berger, 1983).

A Role for Policy?

Thinking about a role for policy requires response to at least three broad questions about parent involvement: Does it work? Should it be a policy priority? Is it a feasible target for policy?

Does it work? Evidence generated over the past twenty years' efforts to involve parents through diverse strategies generally is positive. Where parent involvement models have been implemented according to design, expected benefits typically are evident. (For an extensive review that extends the efforts cited here, see Henderson, 1981). Significant educational, bureaucratic and political benefits are associated with active parent advisory councils. Home-based parent partnership programs show clear student academic gains as well as increased levels of parental interest in and support for the schools. Teachers, too, benefit from home-based models through greater knowledge of their students' home environment. School-based models report different outcomes. While apparently successful for more advantaged parents, they have been less effective in securing the involvement of low-income parents.

These findings suggest that strategies which assume the initiative of teachers and administrators (rather than parents), which locate involvement activities on parent's turf (home tutoring, council structures and schedules defined by parents' needs), and which are responsive to local political realities (instead of state and Federal regulations) can be effective in securing the participation of parents of poor or low-achieving students.

Should parent involvement be a policy priority? Even if it "works", should parent involvement concern policy makers given the multiple, competing demands for policy attention? We believe the answer is "yes." Parent involvement merits significant policy attention and public resources primarily for two reasons. One stems from the strong evidence that low-income and poorly educated parents want to help and want to play a role in their child's education. Further, we see that this parent group seeks a role even when they believe their children will fail or do poorly (Scott-Jones, 1980 as cited in Epstein, 1983, p.23). Despite conventional wisdom to the contrary, lack of parental knowledge does not equal a lack of parental interest in the schools (see also Ogbu, 1974; Lareau, 1984). What are lacking, in most schools and districts, are strategies or structures appropriate to the involvement of these parents.

A second reason for focusing policy attention on the issue of parent involvement derives from demographic data. The concerns and problems that prompted policy attention to low-income parents and the parents of low-achieving youngsters in the mid-60s will be magnified in the years ahead as changes in the differential birth rate between minority and majority populations, family patterns, immigration trends and in wage-structures increase this parent group many-fold. For example, today's school children have the following characteristics:

14%	are illegitimate;
40%	will be living with a single parent by their 18th birthday;
30%	are latchkey children;
20%	live in poverty;
15%	speak another language;
15%	have physical or mental handicaps;
10%	have poorly educated parents. (Hodgkinson, 1986, p. 6)

A significant portion of today's school children, then, come from the family situations that gave rise to concern about new ways to involve parents twenty years ago. Indeed, only 7 percent of today's school-age youngsters come from families that were typical in 1965--two parent, single-wage earner families.

Further, demographic projections indicate that these trends will continue and generate a public school clientele which dominately is "non-mainstream" in the near future (Hodgkinson, 1986). Traditional, mainstream or PTA-type parent involvement models predictably will be ineffective in promoting the participation of the parents of these children. It is evident that the success of the schools in serving these student groups can be enhanced significantly by reaching out and engaging their parents. Experience suggests that school success is as much an act of social construction undertaken by families and schools as school failure has been shown to be (e.g., Sieber, 1982). There is, in short, a strong case for parent involvement as a policy priority. Parent involvement, then, apparently is an effective strategy when implemented according to design and is well justified as a target for public policy. But is it a feasible subject for policy intervention? Can policy make a difference in the level and quality of parent involvement, especially for parents of poor or underachieving students?

This question is problematic. It is not clear that policy can mandate the things that matter. As the preceding review shows, the involvement of low-income parents through any means has been extraordinarily uneven among the country's schools and districts. In general, mandated parent advisory councils have not been implemented as reformers intended. Instead, in most districts and at most school sites, parent councils have been effectively letterhead bodies that second decisions made by school administrators with little input or debate. Educators typically did not exert effective effort to form and support parent advisory councils; parent demand for active councils has not been high in most areas. Partnership models too have been implemented unevenly; where they are in place, they typically reflect individual administrator's or teacher's interest, rather than institutionalized or systematic concern.

Thus we must conclude that the development and support of effective parent involvement strategies turns on local realities and on the attitudes and beliefs of those individuals--district administrators and teachers--primarily responsible for implementation. Effective parent involvement activities, it is clear, do not depend centrally on policy guidelines. Indeed, it is evident that policy makers cannot require the things essential to meaningful parent involvement--belief in the ability of low-income parents to contribute in important ways to their youngsters' education and willingness to make an effort to involve them.

The Federal policy shift from the parent involvement mandates of the ESEA to the loose requirements of "consultation" with the community required by its successor, the 1981 Education Consolidation and Improvement Act, shows how superficial such mandated responses are in the absence of supportive local attitudes and beliefs. In the numerous rural, homogeneous communities in which compensatory education parents can only be differentiated from other parents by their children's test scores, councils disappeared almost entirely. Here in the absence of conflict between any one segment of the community and the schools, parent councils fit poorly with local norms of communication; councils structured by the 1978 Title I legislation had been both unnecessary and burdensome.

Similarly, councils have been eliminated in those rural communities where minority groups exist at the margins of political and economic life--migrant farm workers, for example. Here Federal requirements for meaningful parental involvement were necessarily insufficient to alter the unequal balance of power. Only in those districts--overwhelmingly urban--where parent councils have served an important political and bureaucratic function--channeling potentially harmful community conflict and generating support for the schools have councils continued with strength. In fact, in many of these cases, the

Federal mandates of the mid-60s built upon existing parent involvement structures and parent councils have co-existed for some time with other, district-generated channels of participation--evidence of the congruence of this strategy and local context. Consequently, even in these ostensibly "successful" instances it is difficult to attribute success directly to policy.

Is there a role for policy, then, in an arena that depends critically on individual attitudes and beliefs? The policy question must engage the chicken-and-egg problem associated with both broad forms of parent involvement. Administrators and teachers who act to support meaningful parent advisory roles or partnerships say that the effort is not an unreasonable burden and well worth the associated benefits. Administrators and teachers who for a variety of reasons do not support these modes of involvement for low-income parents feel that personal and institutional costs in this area outweigh any benefits. Yet we see that low-income parents as advisors and as educational partners (especially as home-based tutors) can generate important consequences.

To abandon a policy role, then, would render the involvement of low-income parents dependent on individual, local initiative and obviate the possibility of any systematic or institutionalized approach to the problem. Yet, to require involvement of any mode through policy would likely lead to much wasted time and resources where individuals and communities did not support the strategy.

Experience with general efforts to bring about planned change in education provides some purchase on this policy paradox. From this perspective, stimulating and effecting successful parent involvement efforts presents a change problem of the highest order. Developing and carrying out meaningful parent involvement efforts assumes the most difficult sort of change, change in beliefs and practices. While incremental change in existing activities, or change in the use or revision of existing materials present complex issues, the most problematic changes to effect are changes in what people do and in what they think (see Fullan, 1986). Implementing effective parent involvement activities requires both. Teachers and administrators need to change their beliefs and attitudes about low-income or poorly educated parents before they can develop practices to work meaningfully with them.

This analysis presents a discouraging conundrum. However, there is evidence that policy can be successful in modifying beliefs. In particular, the planned change literature indicates that behavior often changes before beliefs (see Fullan, 1982). While believing is doing, then, it also appears that, in some instances, doing is believing.

This suggests a policy approach to parent involvement that strategically combines pressure and support. Some combination of these is necessary to encourage teachers and administrators to try various parent involvement activities with the goal of eventually modifying their attitudes about the ability and interest of low-income parents. But some combination of pressure and support is necessary, too, even for those individuals who support these goals. The policy questions thus become "what kinds of pressures?" "what kinds of support?" are appropriate to promote parental involvement for low-income, low-achieving youngsters.

Guidelines for Parent Involvement Policies

Evidence from the past 15 years' efforts to carry out planned change shows that little change or improvement occurs without some element of pressure--even where participation is voluntary (Fullan, 1986). Pressure in this instance serves as an attention-focusing strategy, establishing priority for an activity or change in the context of many other, and often competing, demands. At the same time, experience has shown that the search for appropriate pressures should move beyond the rule-based pressures that characterized parent involvement policies in the past. The inability of mandates to bring about parent involvement to any meaningful extent is evident. A more fruitful source of policy pressure to encourage parent involvement may be norm-based--pressures based in the incentives, values and priorities that influence the behavior of teachers and administrators.

Normative pressure would comprise information about the success of various parent involvement activities, incentives to try new practices or peer-based development efforts, expectations for professional behavior at the school and district level. Central to such a norm-based approach would be education. Education for teachers about the merits of involving parents, about the interest and willingness of low-income or poorly educated parents to become involved, about specific involvement models that have proven successful. Education for administrators about the importance of teachers' initiative and of administrators' expectations concerning parent involvement in the school or district, about the bureaucratic and political value of parent councils, about the importance of signaling the value of parent involvement to both teachers and community. Education for public opinion leaders about the particular promise and contribution of involvement for the parents of poor or educationally disadvantaged children.

These education-oriented efforts aim directly at the professional norms and values that drive practitioner choices. Of the multiple pressures operant in the education policy system--the various sanctions and incentives--those based in the normative structure of the profession consistently have been most effective in changing educators' behavior (see, e.g., Lortie, 1975; Fullan, 1982). Credible, specific information about the value of parent involvement activities, clear expectations from opinion leaders and organizational leaders about the need for and merit of parent involvement, detailed and believable descriptions of successful activities are more likely than are rules or mandates to move educators to try something new in the area of parent involvement--even if they are not yet convinced of its value.

There is, in short, a substantial "sell job" to do in the education policy system concerning the participation of low-income, poorly educated parents. This, together with the attendant requirements for change in attitudes and beliefs, presents a difficult but not impossible challenge for policy.

What kinds of supports could policy provide? If normative pressures succeed in nudging educators to consider new practices, these inclinations require support such as materials, training, networks, mini-grants, and the like. Of particular importance are the dissemination of information on and financial and logistical support for successful parent involvement strategies. Even those educators convinced of the value of parental involvement are often strapped for creative and effective mechanisms to foster meaningful participation. This need is most acute in rural areas where myriad cultural, educational, and logistical obstacles often undermine the plans of committed teachers and administrators.

We also would include "rules" under the rubric of support (rather than pressure). The history of Federal compensatory efforts clearly shows the importance of rules as legitimation for new activities or efforts likely to encounter serious opposition. "Because I have to" has protected many a Title I administrator from pressures to distribute resources or develop structures other than as intended by the legislation. Some kind of sanction through policy can support local efforts and highlight the area in the midst of other competing initiatives and pressures. The School Improvement Program in California, for example, has experienced success in fostering effective parent involvement by requiring school-site "partnership" councils (50 percent staff, 50 percent community members), charged with specific programmatic responsibilities: planning, needs assessment, and evaluation. Parents and administrators agree that this council model has been effective because it is not dominated by parents and because it provides for decision-making authority. While such specific requirements might prove unenforceable and politically unfeasible in Federal categorical programs, we would argue for the continued inclusion of mandates for consultation with parents in such legislation.

But to reiterate, rules or mandates alone cannot stimulate the changes in beliefs, attitudes and practices necessary to a meaningful level of parent involvement in the schools. Change of the nature and level required depends on motivating teachers and administrators to try. The evidence is compelling that doing can be believing.

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THE PARENT GAP IN COMPENSATORY EDUCATION AND HOW TO BRIDGE IT

by

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THE PARENT GAP IN COMPENSATORY EDUCATION AND HOW TO BRIDGE IT

Two major questions addressed in this paper are:

- How can the mounting research on the relationship of the home to children's school success be translated into practical action in communities across the nation?
- How can we involve all families meaningfully in children's education.

The Parent Gap

A great deal is already known about the importance of the family as educator. Yet, the focus for and the responsibility for educational reform has centered almost exclusively on the school.

While there have been specific efforts to work with families, they are fragmentary and come and go, usually go in times of budget cutbacks. Local schools have not yet been supported or encouraged to work with the home or with other community agencies in a concerted, systematic manner.

The major thrust for education reform, including the report of the National Commission on Excellence in Education (1983), focused almost exclusively on the school. That report addressed parents only in a postscript: "As surely as you are your children's most important teachers, your children's ideas about education and its significance begin with you. Moreover, you bear a responsibility to participate in your children's education".

These are good words. But what is the parents' responsibility? And what is the responsibility of policy makers?

The 1984 State Legislative Summary of Children and Youth Issues, in the rush of activity after the National Commission report, identified over 600 different bills affecting children and youth. Clearly, policy makers are seeking ways to support and strengthen the family. Many of these laws affect children's schooling and they could have included measures to promote family involvement, but, in most cases, they did not (National Conference on State Legislatures, 1984).

Reform activities and initiatives, summarized by the publication Education Week (1985), included such traditional topics as career ladders and competency tests for teachers, higher graduation requirements, and limitations on extracurriculars for students. No state identified family-school involvement as a strategy to be used to address educational issues.

What Works, the just published report by the U.S. Department of Education (1986) is the most supportive document attesting to the impact of parent involvement in children's schooling. It is an important opening step.

The startling "parent gap" in the policies and programs of the education reform movement is explainable: One reason is that there is a basic lack of knowledge about the research and experience which point to the significance of the family in the education of children. Another reason for the "parent gap" is the appealing myth that parent involvement doesn't cost money, that it's all free or should be free. The work done by parents and children at home is free once involvement programs are set in place. However, what isn't free is the funding needed to put these programs into place, for personnel (a coordinator or home-school liaison worker to reach out to families) and for materials families use at home (home activities and other parenting information).

If parent involvement is regarded as important and critical to children's school success--and it is now known that it is--then parent involvement must be seen as basic to the school process; it must be funded and supported consistently in the same way that reading, writing and math are supported.

Reasons for Bridging the Gap

Current Research

Briefly, what is already known about family involvement programs is that they address major school problems. Among them are: disappointing student academic achievement; poor work behaviors and attitudes of students; and the relationship between home and school (Collins, Moles, & Cross, 1982).

Research evidence indicates that parent involvement raises the academic achievement of students; improves attitudes and performance of children in school; helps parents understand the work of the schools; enables parents and children to communicate more and show their caring toward each other; and builds school-community relationships in an ongoing, problem-preventing way (Epstein, 1984).

In Maryland, researcher Joyce Epstein (1983) additionally found that, "Parents who participated in involvement programs were more positive about the teacher's interpersonal skills, and rated the teacher higher in overall teaching ability.... In other words, teachers who work at parent involvement are considered better teachers than those who remain more isolated from the families of the children they teach."

The evaluation report (Year I on the Home and School Institute's multilingual home activity project) reported the following additional payoff. For the teachers, the major benefit have been increased parental involvement with their child's school experiences. More parents came to school conferences and more parents contacted the school regarding their child's absence from school or aspects of their child's school work. This finding was very clear for the teachers (Trinity College, 1984).

As one teacher said to the evaluator: "This project has helped pull parents into the school. The parents of my kids have been usually involved this year, not just in coming to school for programs and parent conferences but they're calling more and sending more notes. I also sense they are looking at the homework more than last year" (Trinity College, 1984).

Finding ways for schools to establish family support in education is strategic use of scarce public resources. A minor input of school staff time and materials makes major output of parent support possible.

Today's Family

Schools must work with a new kind of family today—not necessarily worse or better, but different. Without going into elaborate demographic detail, it is sufficient to note that the majority of mothers today hold jobs outside the home and that single parenting is on the increase. It is predicted that by the year 2000, 50 percent of all children will have lived at least for a time, in a single parent household (Bureau of the Census, 1985). Working parents may not be able to come to 2 p.m. school events, but they want to help their children (Home and School Institute, 1984). Even under the constraints of limited time and financial pressures, today's parents care about the value of their children's schooling. After years of heavy dependence on the school to do everything, the public appears ready to assume more responsibility for what's happening to children. In recent Gallup Polls, lack of discipline was cited as a major school problem. When asked for the cause of the school's discipline problems, the public, including parents, laid chief blame on the home (Phi Delta Kappan, 1984).

Most parents today are better educated than those of previous decades. It's no secret that parents are asking questions, making demands, and showing concern. Parents are seeking involvement in the education of their children. They may not come to meetings at school, but parents are interested in ways to help their own children--ways that are easy, fast, and linked to their children's school achievement (Home and School Institute, 1979).

New Roles for Schools and for Families

It's been traditional to talk about the need for family support of the school. And that has usually been defined through such activities as advisory council and volunteer work in the classroom. For the majority of families, this is out-of-date and ineffective as an approach for home-school relations today.

What's needed now is not old-fashioned support of the school, but new and different support for the educational role of the family. It is increasingly clear that priority attention should be given to developing the mode of participation which directly involves parents in the education of their own child. This is often referred to as the "parent-as-tutor" approach.

The reasons for this position are two-fold. First, it is the approach which a continuing line of research indicates is most directly linked to improved academic achievement. The second reason for this position is that it offers the greatest opportunity for equity for widespread involvement and sustained participation. Programs which require attendance at meetings or involvement in school activities during the day will necessarily have limited participation. The need to reach out to single parents and to families in which both parents are employed is a special concern. Furthermore, this approach appeals to the most basic parental motivation for involvement in the first place--the desire to help one's child do better in school.

What do I mean in practical terms when I speak of the family's educational role? It's old-fashioned because it will sound like what parents have always done. And it's very modern because many parents today never learned or have forgotten what they had to do at home to pave the way for their child's success in school. In recent years, education became a job for the school, and usually for the school alone. It is now known from research and common sense that education, to be successful, has to be a team effort. But there are a lot of people out there who don't know this or they don't know how they can help.

Let me amplify my approach to the family role. The traditional form of family involvement of the last two decades has been the advisory council with families in an advisory capacity, as in Title I PACs. Good or effective family involvement appropriate for today's families is different. The advisory role, while it may have been a relevant and useful model at the time it was designed, is no longer the most appropriate involvement method. This is due to the changes in family life and to the findings of educational research.

Appropriate involvement today provides learning strategies for families to use at home. These reinforce but do not duplicate the school. Today's involvement uses the school, community agencies, and businesses to "deliver support" to families in their important role in the education of their children.

Effective involvement today needs to be based on a non-deficit view of families. More traditionally, families have been identified by deficits, with the school in a compensatory role. My position, based on experience with thousands of families across the nation, is that there are strengths in every family that can be mobilized into effective educational action (Home and School Institute, 1983).

The roles of parents and teachers are different--they are different but they are complementary. The family is in the ideal position to prepare for, expand, and extend the work of the school. To use the family only to duplicate the school does not take advantage of the family's significant educational role. Beyond traditional homework, there is the unique opportunity for families to engage in individualized give-and-take with students at "teachable moments" that teachers can only dream about.

However, there is still a prevailing idea that working with families is somehow too complex a task and if only we could tune the school, that seemingly controlled environment, to a finer degree, that schooling problems would be solved. While I have great respect for the school, and I am a longtime schoolteacher, it is clear from our own Institute research and from the research of others that this approach is like expecting a three-legged stool to stand firmly on one leg, that of the school alone.

Schooling needs to be thought about in the same way as football games and orchestras. You can't play a football game alone, no matter how good a player you are. And you can't play a symphony without the rest of the orchestra. Right now, schools are being asked to play the game without all the players on the field--and that's no way to win.

Educators can be helped to see themselves, not just as classroom leaders, but as community leaders, corralling and connecting the other people outside the classroom who have so much impact on what children do inside the classroom. Everyone has a part to play, and when structured effectively, these parts combine and complement one another. For example, in the last two years, the National Education Association (1985) has been sending home Institute activities from teachers to families in 17 states. The work of the teacher and the parent do not overlap in these programs. Each plays as a member of the team, and response is overwhelmingly enthusiastic.

The community-coaching role that I recommend for teachers cannot be accomplished if their effort is viewed as an extra, something "nice" but not really essential. This is the way parent involvement is usually viewed, and this is the damaging misconception that I have analyzed in my new book, The Forgotten Factor in School Success--The Family (Rich, 1985).

Briefly, here is how the Home and School Institute (HSI) system works and it has worked in 12 different demonstration projects at 35 sites nationally, including programs for special education and bilingual families.

A New Kind of Involvement

The HSI system provides parents with techniques to foster children's learning. In fact, parents who already know the value of informal education may be using these on their own. The key to the HSI system is to motivate all parents to get directly involved in the education of their own children.

These are activities that do not duplicate the work of the school. The activities are not keyed to tomorrow morning's test but to the basic attitudes and skills children need to do well everyday in school and out. The techniques for the young child are such activities as using the clock to teach arithmetic, using the TV schedule to keep to time limits, dialing and reading telephone numbers; for the older youngsters, activities include filling in blank comic strips with home-made dialogue, making good purchases at the store, or using maps for family trips.

The material is written and presented in such a way that parents know exactly what to do. They are encouraged to use their own imagination and creativity. They are told they can do nothing wrong. An activity, for example, is "Measure for

Pleasure." In this, families measure everything in a room. "Catalog Shopping Spree" is another. In this, families "hypothesize about what to buy and make some wise buying judgments." Another is "Current Events Wall," where children and parents post articles and materials in which they are interested. There's "Morning Messages" where everyone in the family writes to each other. After a while, families start to make up their own activities. The activities are done alongside household routines. A hurried parent in a few minutes a day can teach science or reading or math or writing in a relaxed, at-home way.

These programs have been documented to raise academic achievement and improve student attitudes. The distribution system for these programs is as follows: In the course of a semester, classroom teachers send the activities--one each week--home with students. Together, children and their parents do them. Parents return feedback sheets that indicate they have completed the activity. This interaction increases communication among all participants.

The key to this system and the way it differs from other programs is not these activities as such, although, they are very carefully designed. HSI methods stimulate families to continue use of activities such as these at home on a regular basis. It has been very gratifying in my 20 years of working with parents, many of whom are foreign immigrants, many of whom are on welfare with little education themselves, to see how deeply they desire their children to succeed.

The Institute programs are built on a nondeficit approach to families. The key is to use qualities and innate capacities that virtually all parents have. A parent's capacity for caring, concern and love for their children is already in place: The nondeficit approach builds on these and on the capacities parents have for self-help.

HSI programs appeal to parents because they provide self-help techniques that do not demand that families have money, be well educated or even highly literate. They build on the motivation and the love that parents have for their children.

HSI trains teachers to tell parents how important they are in teaching their child and gives teachers the prepared home learning materials to use. In some programs, such as the one that HSI created in Los Angeles, parents teach other parents (Plaskett, 1978).

By and large, teachers generally have not received training in reaching out to parents, nor do they know the research which underscores the importance of doing this.

Often, even if they want to work with parents, they do not get the support and the time from their school systems to do it. The Institute works with school administrators to win their support in this critically needed effort. Some school administrators do recognize the importance of this work, but they are still few and far between.

Recommendations for Action

To take advantage of the family role in education will take some reorientation of policies and programs. It requires people, information and programs to make things happen. Willing volunteers, even parents, need help and direction. If they didn't, right now across the country there would be all the family support from families that is latent but has not been tapped. It needs mobilization. This section outlines the steps in a mobilization plan. My recommendation is that the Federal government, in its leadership role, share programmatic approaches with states and localities.

Here is a basic design presenting 10 essential themes needed to conduct a successful home-school program keyed to the educational role of the family. This design has been selected because it can be put down anywhere and work. Yet at the same time, there is room for local individualization and application.

In What Works, the U.S. Department of Education made clear that research supports the following significant key findings: (a) "Parents are the children's first and most influential teachers. What parents do to help their children learn is more important to academic success than how well-off the family is" and (b) "Parent involvement helps children learn more effectively. Teachers who are successful at involving parents in their children's schoolwork are successful because they work at it" (U.S. Department of Education, 1986).

Building on What Works

The following recommendations provide structure for carrying out the points in What Works. They are keyed to basic needs of families and educators to put changes into action. Each also lists ways to carry out the recommendation.

The overall goal is to increase public awareness about the family's impact on learning, to emphasize family and school strengths and to give all families practical things to do to help themselves and to help their children learn better.

Teachers and families need information, and they need support to use it. The school is the key facilitator of this approach. Educators can help families and the community assume appropriate responsibility for children's success in school.

1. Set a base of understanding and acceptance of the parent-as-educator concept through an information campaign. This helps ensure the success of programs that call upon families to take steps on their own.

   Example: A local media campaign can begin to educate the public on HOME: A SPECIAL LEARNING PLACE. Signs, slogans, home learning activities through the radio, TV, back-of-the bus signs, messages on grocery bags and on construction fences carry the message with this general theme: Home ± School = Learning.

2. Identify ways to encourage fathers to be involved directly in the care and education of their children and in their children's schooling.

   Example: A media campaign can be started showing fathers working with children. These public service messages can appear on TV during sports broadcasts. This enhances the image of the "macho" man as caregiver to children.

3. Provide meaningful roles for the private sector. Businesses can receive information and materials to support the family/school relationship. The choices for private employers to help parents are not limited to setting up child care centers.

   Example: Encourage the contributions of business to the work of schools beyond sending occasional volunteers into the classroom. This could mean employers giving time to employees to participate in parent/teacher conferences and also distributing parenting information that helps employees with work/home conflicts.

   Example: Parenting information for families should be available (in easy-to-read, easy-to-use leaflets) from every school and also from places like doctors' offices and supermarkets. Families across the nation have similar needs for similar kinds of information. (National Education Association, 1985)

   Concern about children and lack of time to be with them are fundamental sources of anxiety and inattention for working mothers (Bureau of National Affairs, 1986). These can lead to job performance problems.

Working mothers (and fathers too) need the tools that can help them manage the demands of their work and home lives—as well as their children's education.

HSI is now developing the CAREERS AND CARING PROGRAM. This is a series of how-to activities that employees are given to take home. Employees use these to manage the often competing demands of work and home life and build their children's abilities at the same time.

While providing support from business, this is essentially a self-help approach that extends responsibility to employees and provides strategies employees use to help themselves, their families, and their schools.

4. Assign educational responsibilities to the family. Federal policy and programs should help localities focus on the methods identified by research as being the most effective. These should emphasize the educational role of the family.

   Example: Original ESEA Title I programs were designed with the family/community functioning at best in an advisory capacity. This is no longer the most appropriate involvement method. A redirection of this policy at all levels, to take advantage of the family's educative role is now in order. This will entail reorientation for state and school personnel administering local programs.

   Example: Use a school/home involvement system that provides families with specific, practical activities they can do to help their children learn. HSI has tested home learning activities that simultaneously provide reinforcement in an academic subject, teach a daily life skill to children, and meet the time needs of working parents. These home activities while supportive of school, should use the unique resources of the home and neighborhood and be different from traditional schoolwork. Such programs cost next to no money and foster parent-child closeness and are enthusiastically received by parents, children and teachers.

5. Provide teachers with training and information to help them work well with families. Teachers need training and materials to help them work more closely and effectively with today's family. Part of a new and enhanced role for teachers is to facilitate what is learned outside the classroom

with what is learned inside. This means that teachers need additional training to work with adults as well as with children.

Example: Experience with HSI School and Family-Community Involvement training for educators indicates that teachers on the job have not been prepared for work with families. Teachers need to know the research about families as educators, and they need to know the strategies for reaching and teaching adults. Providing this know-how to new teachers should be expected from and included in current teacher training. Training programs can be designed so that teachers on the job can participate in half-day sessions to gain these needed skills.

6. Support family involvement as an integral and funded part of the school's services. Schools should recognize the family as a system--a system for teaching and learning across the grades in all subjects.

   Example: Set up an Office for Family Involvement in the school system to support home-school liaison work at every school.

   Example: Train paraprofessionals for the specific job of working to connect home and school.

   Example: Establish Family Resource Centers at schools and businesses, perhaps staffed by senior citizens, where parents can meet to get information and materials on childrearing and education.

7. Provide ways for families to help each other. Find ways to support the work of parent-to-parent programs. The current interest in self-help has been identified as a Megatrend.

   Example: Incentives can be provided for schools to establish peer-support groups for teen parents, for single and working parents. Outside groups such as "Parents Without Partners" can be encouraged to organize and hold meetings at the schools and to focus on school-family concerns.

8. Provide support for complementary efforts to schools from hospitals, child care groups--all who work with children. Start with children's earliest years: Provide information for parents about their significant educative role from a child's birth on.

Example: Education for successful schooling can begin with in-hospital programs to provide new parents with practical tips and information on how they can help their infants develop optimally.

9. Integrate more education in family day care. Schools should support education programs for children in family day care. The majority of early childhood care in this country is being offered in family day care homes: It is recognized that before-school education is vital to the success of children in school.

   Example: Educational training and visits to schools can be organized for family day care providers. To provide incentives, family day caregivers can obtain accreditation for their successful participation in such programs. Preschool care providers need to see how their work ties in with the work of the schools.

10. Involve senior citizens and non-parents. Senior citizens, growing in number, more vigorous and healthy in later years than every before, are an untapped resource for helping families and teachers.

    Example: The HSI Senior Corps curriculum, field-tested in the inner city, provides a model for communities to consider. It is a structured basic skills curriculum for seniors to use in working with students with special needs in class and it also provides complementary activities for the students' family to use at home. The family and the senior form a team to help the student overcome learning difficulties.

Infrastructure for Change

The recommendations above are basic components of a campaign to encourage greater awareness of the total community's role (especially families) in the education of children. This campaign will serve four primary purposes: (1) to involve the media to increase public understanding of the family's critically important role in children's education; (2) to give parents (and other adults caring for children) practical things they can do to help children learn; (3) to involve business as a distributor of parenting and education information to their employees and to their customers; and (4) to ensure that senior citizens and other populations beyond parents are integrated into this community education process.

This sets in place a basic home-school infrastructure which to date has not been built. Infrastructure in education means connecting schools more formally to the rest of society--to the family and the home, the outside-of-school environments in which children spend more time than they do in school.

The fact that the recent education reports focused so much on teachers when they are but one cog, albeit important, in the education machinery is evidence of lack of infrastructure in education. Just as good health depends on more than medical care, education depends on more than schooling.

This infrastructure can be put in place fairly quickly: It is not a new level of bureaucracy. It is a connector, taking advantage of what is already there to ensure that home, school, and community work together.

School and family responsibilities are increasing and will increase even more in the near future. Before 1990, there will be more young children in school and more mothers in the workplace. Minority students are increasingly the majority of students in urban schools (Hodgkinson, 1985). For more students to succeed, it is vital to enable families to have greater positive impact on children's schooling.

Fortunately, there is today a convergence of opportune forces and needs about families and schools:

- Teachers are realizing more than ever that they must work in partnership with parents and the community.
- A growing research base is affirming the impact of families as educators of their children.
- There is strong interest in this country in self-help initiatives rather than in waiting for government and institutions to take care of individual needs.

These are the strengths that the Federal government can build upon to provide educational leadership that states and localities are ready for and will be pleased to receive.

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PART VI: RELATIONSHIP BETWEEN CHAPTER 1 AND REGULAR SCHOOL PROGRAMS

THE COORDINATION AMONG REGULAR CLASSROOM READING PROGRAMS AND TARGETED SUPPORT PROGRAMS

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COORDINATION AMONG REGULAR CLASSROOM READING PROGRAMS AND TARGETED SUPPORT PROGRAMS

Among those who discuss educational intervention programs for specially targeted student populations (e.g. Chapter 1 for economically and educationally disadvantaged, P.L. 94-142 for the handicapped, bilingual education for those whose native language is not English) there seems to be general agreement that little coordination exists among the various Federal, state, and local initiatives. While coordination has been variously defined in these discussions, regardless of definition, virtually no one reports locating coordinated efforts. In this paper, we will review and frame previous discussions of coordination and clarify the issues involved in the development of coordinated educational programs to provide optimal instruction for those children who are regarded as having special needs.

At the outset we briefly discuss the notion of coordination as it has appeared in the literature. We then review the available evidence on the coordination of core curricular instruction with the curricula and instruction offered in a variety of educational intervention programs designed to alleviate the school failure of targeted student populations. In most cases these intervention programs are in place because of policy making at higher governance levels and the programs are subject to regulations issued by Federal or state agencies or both. We assess the influence of the policies emanating from higher levels on the policies and practices at the lowest levels, the school and classroom settings.

In the second section of the paper, we present an analysis of a set of assumptions that have seemed to guide the policy making at the highest levels and point out some of the consequences of these assumptions. Here we are particularly concerned with how understandings of the higher-level policies have affected those developing lower-level policy, especially at the local district, school, and classroom levels. We argue that most higher-level policies are grounded in assumptions about how children learn, or fail to learn, in schools and that many of the guiding assumptions are clearly suspect.

In the final section we propose some alternatives to the current assumptions that guide most policy at the highest levels, and which influence policy and practice at lower levels. We argue for curricular congruence as a key to the design of effective programs for alleviating school failure. In one sense we propose to redefine coordination with a focus on the quality of services received as a result of participating in instructional intervention programs that derive from policies emanating from the Federal level especially. Throughout, we focus primarily on efforts to alleviate reading failure since most of the programs have been designed, explicitly or implicitly, to address this problem. The coordination of core curriculum instruction with the support program instruction and the coordination of instruction between support programs are our principal concerns.

What is Meant by Coordination

Coordination of instructional programs has been approached in several ways. One view of coordination concerns the relationships between programs and policies at different levels of governance. These vertical analyses of coordination emphasize the consistency of regulatory policies concerning educational intervention programs for targeted student populations. An example might be the relationships among the federally funded Chapter 1 program, a state funded remedial program (e.g. Pupils with Special Educational Needs (PSEN), and a locally funded remedial program. Some of those examining this vertical coordination have focused more on the issue of overlap among the target populations and the difficulty of maintaining clear audit trails when programs and policies emanating from different levels of governance have similar goals and target populations (cf., Legislative Commission on Expenditure Review, 1982). These vertical analyses seem to primarily concern examinations of laws, policies, and regulations, both formal and informal. For instance, Moore et al. (1983) conducted a textual analysis of Federal and state policies and laws governing several educational intervention programs in eight states. Here, then, coordination was defined as an element of the regulatory features of different intervention programs. Coordination was noted, in this case, when the regulations and policies were found to contain language that required that complementary uses of separate programs and funding sources be identified and effected. However, little evidence of coordination of programs was found.

However, Moore and her colleagues (1983) also attempted to assess horizontal coordination among programs. In this case, different programs offered at the same level of governance were examined for coordination in regulatory features. For instance, complementary use requirements in Chapter 1, P.L. 94-142 and the Vocational Education Act were examined. Since it is obvious that some students would be eligible for programs under each of these Federal initiatives the analysis sought evidence of coordination in the Federal regulations governing these programs. Again, little evidence was found.

We have previously argued (Johnston, McGill-Franzen, & Allington, 1985) that, in the case of reading failure, there is little reason to expect extensive legislative coordination. Indeed, often legislative initiatives presume that student subpopulations (e.g., economically disadvantaged, learning disabled, bilingual, migrant) are identifiable and therefore, by definition, require different educational interventions. We argued that little theoretical or empirical evidence existed to support either assumption. In any case, the various analyses of regulatory coordination, whether examining vertical or horizontal coordination seem to conclude that Federal policy has been generated in a sort of patchwork design with too little regard for coordination of programs, policies, and regulations.

We began with this brief sketch of efforts to identify regulatory and programmatic coordination at the Federal level because we believe that the lack of attention to coordination at this level has had some influence on the design of programs at lower levels of governance. That is, we agree with Elmore and McLaughlin (1981) that the implementation of policies at higher levels forces policy making at lower levels. In addition, some of that lower-level policy making (e.g., state policies, local district policies, school and individual's policies) is shaped by higher-level policies as those policies are translated and understood by those at lower levels. However, our primary interest is in coordination as it relates to the delivery of instructional services to children in school settings. This view of coordination is by no means unique. Allington and Shake (1986), Hannifin and Barrett (1983), Johnston, Allington, and Afflerbach (1985), and Moore, Hyde, Blair, and Weitzman (1981) among others, all discuss coordination in terms of the coherent and parsimonious delivery of curriculum to students. In each case the issue is the coordination of the content of instruction. These are calls, in whole or part, for a curricular alignment between core curriculum instruction and the instruction offered in compensatory or special education intervention programs.

Finally, others have discussed coordination in both the regulatory and curriculum senses. Birman (1981), Ginsburg and Turnbull (1981), Kimbrough and Hill (1981), and Leinhardt, Bickel and Pallay (1982) each address the issue of students who are eligible for services from multiple programs. A primary emphasis here is the overlap between populations and the problems of meeting these students' instructional needs with any one program or with services from multiple programs. Less clear in these papers is any call for coordination of the core curriculum with the curricula of the support programs. Instead, the emphasis is on coordination of eligibility criteria and service delivery between programs. This is not to argue that curricular coordination is wholly neglected in these papers, just that other features of the delivery of instruction are emphasized.

Current Status of Curricular Coordination

Curriculum coordination has never appeared as part of the Federal regulatory language for any of the various intervention programs that emerged as a result of Federal laws or policies. As noted previously, this may stem from the assumptions of differential instructional needs underlying some of the legislation. Alternatively, it may have resulted from the General Education Provisions Act which prohibits legislation that can be construed to authorize Federal agencies or employees from exercising any direct supervision or control of curriculum or instruction. Nonetheless, in a similar vein, few if any state regulations present guidelines concerning the coordination of core curriculum instruction and support program instruction. In fact, as noted earlier, little evidence of any sort of coordination has been identified, vertical or horizontal, amongst the various levels of governance or amongst the various support programs in the analyses of Federal and state program regulations and policies.

Unfortunately, the same seems too often to be true concerning coordination at the local district level. In our review we sought reports that analyzed school district policies and practices in implementing compensatory and special education programs. We sought in the literature evidence that districts established policies or engaged in practices that resulted in coordination between core curriculum reading instruction and Chapter 1 reading instruction. In addition, we sought evidence that a district coordinated Chapter 1 reading instruction with reading instruction offered in a resource room program for learning disabled students and, perhaps, reading instruction offered in a bilingual program.

District Level Program Coordination

In one of the largest studies of the coordination of Federal education programs with core local program, Kimbrough and Hill (1981) noted that "few districts appear to make serious attempts at coordination" (p. 42). However, the districts examined were all selected as instances in which potential problems existed in administering Federal education programs. Thus the results, while illustrative, may portray an overly pessimistic view of the situation. Nonetheless, the results do suggest that too often school district administrators have continued to treat Federal educational programs "as foreign entities, to be administered separately from the local core program and from one another" (p. 41). The report notes two points that must be considered: 1) district-level efforts at coordination can work and, 2) district-level administrators have far greater resources and influence for producing coordination of Federal programs than do school principals and teachers.

Kimbrough and Hill also report that they found greater coordination in a district where district-level administrators had attempted to reduce scheduling and content conflicts between the core instructional program and the Federal education categorical programs. In this case, a district-wide set of goals for each content area was established for all programs and the core and categorical programs complemented each other in terms of both teaching methods and curriculum materials.

In case studies of two large school districts Moore and his colleagues (1981) examined the "service quality" of educational environments offered children at risk, including a variety of Federal and state categorical programs. They report finding little coordination at the school district level and suggest several potential reasons for this situation. First, they argue that, generally, district-level administrators are not selected on the basis of potential contribution to coherent and coordinated instructional programs. Since the focus of these analyses was "the right to read" they sought to determine whether district-level administrators had been selected because of a demonstrated expertise in developing a district plan for implementing coherent reading instructional services. The review of documents and interviews suggested that generally this criterion was not present in job descriptions of district-level administrators. Thus, they argue that coordination at the district level was unlikely since it seemed neither a priority nor an area of special expertise of district-level administrators.

A second feature they noted was that districts tended to fragment responsibilities for instructional planning amongst several district-level program coordinators. However, these program coordinators operated independently and typically had no direct line of administrative influence. That is, a district with a reading program coordinator placed that position out of any central administrative line of responsibility so that, while the reading programs in the district were organizationally under the control of the position, the reading coordinator had no authority to implement programs at the school level. Only through good humor and persuasive argument could the ideas of the reading coordinator be carried out.

In addition, the reading coordinator was not seen as having authority over reading instruction in special education or bilingual programs since each had a different district-level coordinator who was responsible for students eligible for services under those categorical programs. The special education and bilingual coordinators, in turn, had no authority over either regular core programs or personnel. Finally, no district-level key administrator encouraged or enforced efforts or policies to provide coordinated programs. Moore and his colleagues (1981) argue from their data that if there exists no effective district-level procedures for cooperative planning among the various district content area and program coordinators, then one can expect programmatic fragmentation to occur and to increase over time.

Birman (1981) notes that, in some cases, state regulations or policies may work to increase fragmentation. Her analysis of the overlap between P.L. 94-142 and Title I programs indicates that some states have adopted policies, which are often based on a misinterpretation of Federal regulations, that have excluded handicapped children from receiving Title I services, even when they were eligible for such services. In other cases, school districts had adopted similar policies in the absence of such state policy. In either case, however, such policies seem to negate efforts to coordinate programs and services, since the exclusionary policy decrees no joint service. On the other hand, some states, and some districts, had adopted different interpretions and policies. She notes some settings in which dually eligible children routinely received services under both Title 1 and P.L. 94-142 and these services were deemed essential for successful mainstream placement of handicapped children. Though not directly noted by Birman, it seems likely that district policies that encourage providing dual services to eligible children would work to foster cooperative planning more so than district-level exclusionary policies. That is, district-level policies that systematically deny dual, or multiple program participation among eligible students would seem to make cooperative planning among different programs almost irrelevant. However, as Kimbrough and Hill (1981) and Moore et al. (1981) clearly document, policies allowing dual and multiple program participation are surely not sufficient to assure such coordination.

The influence of district-level administrators' beliefs about the relationship between support instruction and core curriculum was noted in a report by Johnston, Allington, and Afflerbach (1985). They found that district administrators of remedial reading programs split into three categories of beliefs about such program relationships. One group thought the remedial reading and core reading programs should be rather tightly coordinated with remedial instruction being congruent with the core curriculum. Another group indicated the two programs should offer instruction that was distinct from each other, usually arguing that core curriculum instruction was obviously not working since student achievement was unsatisfactory. A third group indicated that the two programs should have some similarity but also provide some distinctly different curricular options. Interestingly, coordinated instructional efforts were far more likely to occur when program administrators believed coordination was appropriate. In these cases, nearly two-thirds of the time the instruction offered in each setting was congruent and the communication among core and support teachers was more frequent with the result being that both teachers knew about the instruction the other offered. Conversely, when district administrators indicated that they believed the instructional programs should be distinct, little evidence of coordination, communication, or congruence was identified. These data suggest that district-level administrative beliefs not only vary about the appropriateness and need for coordinated efforts but that these beliefs are influential in determining whether such efforts are implemented.

Bogdan (1983) offers what may be useful insights here. He notes that special educational programs seldom exist as an integated part of an educational system but, rather, "they are add-ons" (p. 432). This lack of integration was evidenced by a lack of clarity in administrative supervisory responsibilities in many districts. In addition, he notes that most classroom teachers and even specialist teachers were skeptical and irreverent about official categorical identifications but this was not the case with district administrators who, more generally, took such identification at face value. In short, it seems that district-level administrators were more likely to adhere to a belief system that supported categorical separateness than those involved in the daily delivery of instruction to participants.

Leinhardt, Bickel, and Pallay (1982) note a variety of historical facts that seem to work against program coordination, including the several professional and philosophical positions concerning the nature of school failure. Perhaps, as educators become increasingly identified with a single professional or programmatic category, as would likely be the case with separate program coordinators, their belief systems and professional identification become far more firmly entrenched than those who work daily with multiple category students. These beliefs are then translated into instructional practices through both formal and informal policies.

In summary, district-level policies do seem to affect the level of coordination between core curriculum instruction and support program instruction and also the coordination between the various support programs. In most districts, however, coordination of either type seems a neglected aspect of district-wide plans. The available evidence suggests that many districts have not structured administrative responsibilities in a manner that facilitates such coordination and that even in the event such coordination is attainable, the efforts of district-wide administrators in monitoring coordination has been minimal.

The lack of district-wide initiatives seems to enhance fragmentation among core and support programs. This lack of initiative may stem from several sources but three areas seem most likely candidates. First, the low priority seemingly given to achieving a coordinated effort in the employment of district-level administrators. Without a clear goal and leadership at the district level, coordination of support programs is unlikely. Second, the misinterpretation of Federal and state regulations, or the very conservative interpretation of the same may limit coordination. Some have argued, for instance, that district administrators may select certain program designs because they seem safer hedges against compliance objectives and auditors (McLaughlin, Shields & Resabek, 1985). Third, the traditions and professional beliefs of district administrators may actively oppose coordinated efforts. Unlike those who have direct daily contact with students in different categorical programs, district-level administrators seem to invest more heavily in belief systems that perpetuate separateness of categorical programs and instructional efforts.

School Level Program Coordination

In the absence of district-level efforts to attain coordination of core and support program curricula or among various support services, attempts at coordination fall to school-level administrators or the instructional staff of the core and support programs. Perhaps because of the degree of autonomy afforded many school-level administrators, coordination efforts at the school level, in various forms, seem more common than district-level plans and policies, yet still occurr infrequently (Hannifin & Barrett, 1983). Whether we look for coordination of any separate support program with the core curriculum, coordination among support programs, or more complete coordination between and among core and support programs, the current literature suggests fragmentation and separateness seem more the norm than does coordinated effort.

When coordination efforts are defined as scheduling plans and policies, several reports note difficulties in the delivery of support instruction to students. Lignon and Doss (1982), Archambault and St. Pierre (1980), and Kimbrough and Hill (1981) all report that participation in support programs often serves to replace core curriculum instruction. Students served by various support programs actually ended up with less instructional time than students not served. In comparing schools with Title I programs to schools without such programs, others also report that students in Title I schools received less academic instructional time than students in non-Title I schools (Stanley and Greenwood, 1983). Similar results are reported for handicapped students attending resource room programs from mainstream classroom placements (Haynes & Jenkins, in press; Ysseldyke, Thurlow, Mecklenburg, & Graden, 1984). Thus, at the outset the evidence suggests that coordinating core curriculum instruction with support program instruction in order to provide targeted students with additional amounts of academic instructional time is not particularly common. Indeed, it seems that the lack of coordination results in reduced services to the students.

When coordination is seen as communication between the core and support instructional staff the evidence is also less than encouraging. Cohen, Intilli, and Robbins (1978) report a survey of teachers in 46 elementary schools in which they found that more than half of the classroom teachers reported that reading resource teachers rarely or never offered instructional information, suggestions, or materials. Bogdan (1983) reports that core program teacher and special education teachers indicated substantial confusion about who was responsible for instructional planning and delivery. His report parallels some of the situations discussed by Moore et al. (1981) in which both the support program teacher and the core program teacher thought the other was responsible for reading instruction.

In an interview study conducted in ten school districts in two states, we previously reported that nearly a third of core program and support program teachers could not remember when they had last had either an informal or formal discussion of remedial students needs, progress or concerns (Johnston, Allington, & Afflerbach, 1985). In addition, there was wide variability between the pairs of respondents in terms of these meetings with support teachers reporting more frequent and longer contacts about students than did the classroom teachers with whose students they worked. When queried on instructional needs and goals for specific remedial students there was little agreement between the responses of the classroom and remedial teachers. In a further assessment of communication we asked classroom and remedial teachers about the curricular materials used in each instructional setting (core classroom and support program). Two of every three support program teachers were unable to identify the reading instructional material the remedial student used in the core classroom reading context. Fewer than 1 in 10 core classroom teachers could name the material that remedial students from their classrooms used during support program instruction. Similar results were obtained in interviews conducted with participating teachers in an observational study reported by Allington, McGill-Franzen, and Boxer (in preparation).

Several studies have sought to assess coordination between the core and support instruction offered students. These studies reported observational analyses of the congruence between the content of instruction in classroom and remedial reading contexts. Allington, Shake, Stuetzel, and LaMarche (in press) observed students enrolled in remedial programs, though the observations included both core curriculum and support program instruction. The qualititive field notes were examined for several types of potential instructional coordination, or congruence. However, virtually no coordination was identified. The types of tasks, the specific skills emphasized and the nature of the instructional materials more often differed than matched. In short, the instruction remedial students received in the two settings seemed generally independent of each other. This occurred even in an in-class remediation design in which support program personnel offered remediation in the core curriculum classroom.

On the other hand, Pike (1985) reports an observational study conducted in four elementary schools with Chapter 1 programs in a district where coordination is emphasized. This study of second-grade students indicated a fairly high degree of congruence between the decoding skills taught in the core curriculum classroom and in the support program. The district provided a management checklist indicating the scope and sequence for decoding skills in the adopted basal reader series, and remedial teachers were to use this as a guide for instructional intervention. Most did, and although the remediation tended to focus only on this narrow band of reading behaviors, it was coordinated and the teacher interviews supported the suggestion that communication between core and support staff was ongoing. However, within some schools such coordination was less evident than in others, seemingly a result of support staff personality characteristics and professional beliefs.

The Haynes and Jenkins (in press) study, noted earlier, indicated little evidence of coordination among core and support program instruction for elementary special education students. They also noted wide variability in the amount and nature of both core and support program reading instruction offered students with seemingly similar instructional needs. Licopoli (1984) offers one of the rare observational studies of high school support programs. He noted few instances of coordination and suggests that participation in special education resource rooms offered little in the way of preparing handicapped students for participation in mainstream classes. Here, however, there seemed to be little agreement in the school about the fundamental purpose of the resource room support program with quite divergent views offered by school-level administrators, resource room support staff, and core curriculum instructional staff.

While school-level coordination seems generally lacking there are a few reports that indicate such efforts do occur. Rickert, Ripple, and Coleman (1985), for instance, report on the first year of a project where "Chapter 1 instruction is offered in the regular classroom in direct support of the classroom reading program." They offer multiple reasons for the shift away from the previously used pullouts, a lack of appropriate instructional space in some schools for the pullout instruction, and the need for support for the classroom program in terms of Chapter 1 teachers serving as instructional models for classroom teachers. Their report provides little information about the effects of the shift in program design but they do note that problems were encountered with some classroom teachers reporting difficulties adjusting to having another teacher in the room, others reporting differences in philosophies about how to best meet the needs of poor readers and a few problems with personality conflicts.

The incidence of school-level coordination seems low and the level of coordination is quite variable in the available reports. Where they do occur, the most common attempts at coordination seem to be attempts to derive some plan for selecting students and programs when students are eligible for multiple program services. These efforts may include school-level policies that exclude students from multiple services or the development of school-level criteria for participation in one support program or another. This sometimes results in selection criteria for program participation that vary from school to school within a district. These efforts are generally not focused on coordination of the content of instruction. Moore et al. (1983) seem to best characterize the current situation in this area by noting that "program coordination both in the sense of deliberate steps to dovetail instructional effort and in the sense of less deliberate actions to make programs somehow fit into the school setting almost invariably falls to those actually delivering services to students. . . " (p.100). Thus, while some have pointed to the principal as a key factor in achieving school-level coordination (Moore et al., 1981) more often than not such leadership seems to be lacking. In most instances, neither district-level nor building-level administrators seem to provide adequate leadership for achieving either coordination between core curriculum programs and support programs or amongst the various support programs delivering services to low-achieving students.

One final comment is needed in concluding this section. There is evidence that curricular coordination does occur, though not frequently and rarely as a result of general program design or administrative planning. In these areas the coordination is a result of "teacher deals" (Biklen, 1985). That is, a support teacher (e.g. remedial reading, learning disability, or speech/language specialist), through her own efforts and on the strength of her professional expertise and personal style manages to collaborate with some or many of the core curriculum classroom teachers whose children she serves. As Biklen notes, this coordination is often unnoticed, or if noticed not recognized, by key administrators. In addition, we agree with Biklen when he notes that while intervention programs for at-risk children ultimately depend on the expertise of the teachers providing the services, programs should not be hinged on teacher effort alone. That is, Allington et al. (in press) note that much well-intentioned instructional effort was unleashed in the compensatory education classes they observed. But, at the same time, the lack of leadership at higher levels left the support teachers primarily to their own resources and, at times, denied them even that. Biklen (1985) noted that support of the school principal was important to successful mainstreaming of handicapped children. Mainstreaming might ensue without active support but only on a limited and uneven basis. However, any resistance by the principal spelled doom for the effort. We think there is a parallel for the development of coordinated compensatory education programs. Ideally, principals would provide the leadership for such redesign but at the least they would not stand in the way.

The Effects of School-Level Program Coordination

While program coordination at the school-level is reported as uncommon there does exist some evidence to indicate not only that such coordination can be achieved but that these efforts can enhance student achievement. For instance, a report by the New York State Office of Performance Review (1984) noted that schools that were considered successful had greater amounts of interaction between classroom teachers and support program teachers combined with an emphasis on instructional continuity. Likewise, Venezky and Winfield (1979) found that more effective schools were more likely to have integrated support services. In their review of effective compensatory education practices Griswold, Cotton, and Hansen (in press) note coordination of the regular program with other support programs was one of the seven organizational attributes of successful Chapter 1 projects. Gezi (1986) also notes that coordination of compensatory instruction with core curriculum was one feature of leadership provided in successful compensatory education schools.

Nonetheless, we have argued elsewhere (Allington & Shake, 1986; Johnston, Allington, & Afflerbach, 1985) that as attractive as coordination among programs appears we still have little understanding of the effects of coordination of any of the several types discussed and similarly impoverished notions of how such coordination can be routinely achieved. There is some reason to believe that coordination in terms of more appropriate scheduling of services could result in greater amounts of basic skills instruction being delivered to target students. While expanding the quantity of instruction seems likely to favorably affect achievement (Cooley & Leinhardt, 1980; Greenwood et al., 1981; Kiesling, 1978) and would rectify the current situation reported in schools in which support program participation seems to decrease quantity of instruction, such efforts seem minimal, and still insufficient. In a similar vein, we suppose that coordination that attempts to link the content of instruction will result in enhanced achievement. Here, however, we have rather few reports to buttress the argument. The work of Clay (1985) is the most powerful evidence but her work involves more than just aligning the support curricula with the core curriculum. Winfield (1986) assessed the achievement of Chapter 1 participants on reading skills that were emphasized by both the Chapter 1 teachers and the classroom teachers against those skills emphasized by one set of teachers or the other. She reports that the dual emphasis skills were more likely to be mastered than the single emphasis skills suggesting that the coordinated effort produced better learning and retention. However, in her data it was only lower-level reading skills (simple decoding tasks) that received the dual emphasis and the evidence suggests that these skills are relatively easier to master than some of the more complex skills that were not emphasized (drawing inferences from text). Thus, while supportive, these data cannot provide an adequate base for recommending curricular coordination. This is not to argue that achieving curricular coordination has little to recommend it, but simply that we lack empirical evidence. Indeed, later we will argue on theoretical grounds that curricular coordination is critical.

Effects of Federal, State, District, and Local Policies

We need to begin by noting that there is much opinion but little hard evidence to support any conclusion about the effects of policies developed at any level, except that policy making begets policy making. Our analysis of the various reports indicates that two views exist about the effects of Federal policies concerning the development and delivery of support program instruction. In one view Federal policies are the root of all of our problems. Moore et al. (1983) argued that the Federal goal of isolating Federal monies from state and local funds contributed to the administrative separation of the various support programs and that the full Federal funding of Chapter 1 produced only minimal state bases for support of compensatory education. Cohen (1982) suggests that "specialization at the lower-level parallels developments higher up; it also impedes coordination of activities within schools and districts..." (p. 481). Ginsburg and Turnbull (1981) echo this view with their statement that "Federal fiscal controls have also unintentionally encouraged schools to isolate Federal programs from each other and from the regular school program" (p. 36). This view is also offered by Kaestle and Smith (1982).

The common theme in these analyses is that much, if not most, of the current fragmentation can be attributed to the rather patchwork development of Federal policies concerning the various laws, regulations, and programs intended to guarantee or enhance the education of target populations. This fragmented development has been coupled with continuously shifting regulations within programs and shifting interpretations of the same regulations (National Institute of Education, 1977a). On the other hand, the analysis by Moore et al. (1981) of implementation at the local level led them to conclude that state and Federal regulations had slight impact in the decisions made by district or building level personnel. In addition, they note that they found little evidence that any comparable level of effort to meet the needs of at-risk students would have existed in the absence of Federal policies. Similarly, McLaughlin (1982) notes that "federal policies cannot, by themselves, cause particular outcomes; they must be implemented within and through existing institutional arrangements..."(p. 567).

As a result of our analysis of the various reports we have adopted what might be considered an "interactionist" perspective. Like Leinhardt, Bickel, and Pallay (1982) and Stainback and Stainback (1984) we see much of the existing Federal policy structure as unnecessarily duplicative, unwieldy and influential in producing the fragmentation so often noted. However, the development of Federal policy has often followed shifting social beliefs about the nature of school failure and responded to political pressure brought to bear by different interest groups. Federal policy has as often reflected professional wisdom and social beliefs as it has nurtured or refined them. For example, the development of the pullout model, which has been so unanimously adopted in compensatory and special education seemed to follow the professional wisdom of a previous era as much as a desire of the Federal agencies to develop clear audit trails. The small-group clinical model adopted by Chapter 1 teachers and special education teachers mirrored the clinical model so prevalent in university-based clinics where these support teachers received specialized training. The use of separate and different curricular materials to meet the special instructional needs of special populations is likewise part of the professional wisdom (Cook & Earlly, 1979; Dechant, 1981; Gilliland, 1974). An example, for instance, is the "differential teaching" model that has dominated compensatory and special education training for so long, and also fits very nicely into some misinterpretations of the "supplement-not-supplant" provision of Chapter 1.

While it is true that the pullout model of instructional delivery has undoubtedly contributed to the fragmentation of the instruction received by target students it seems unlikely that Federal policies can be wholly blamed for the institutionalization of the model. On the other hand, local administrators who prefer a safe bet in anticipation of a compliance audit might be edged away from other designs by the widespread understanding that Federal policies cast the pullout design in a favorable light. Likewise, state and district administrative organizational structures may have been refined by Federal policies but rarely does it seem that they were created by such policies. We feel we can argue this simply because of the wide variability in existing administrative structures one can currently find. The various Federal initiatives were primarily the result of shifting social beliefs and professional wisdom (Johnston, McGill-Franzen, & Allington, 1985). These shifts and influences largely produced Federal action and policy and thus the patchwork quality of much of the Federal effort. Without Federal policies much of the current special effort would be nonexistent. Thus the "Catch 22."

Analyzing the Assumptions and Their Consequences

Several assumptions seem to have guided Federal policy making in the past twenty years; the era when the Federal role expanded significantly. These assumptions were generally not the result of the Federal policies but, rather preceded them. The first, and probably most critical assumption, is that there exist several identifiable categories of at-risk children. Implicit in this assumption are the notions that 1) children in these several categories have different instructional needs, 2) that these categories are reliably different from one another and, 3) that we can identify children that fit in each category. Unfortunately, as has been argued elsewhere (Algozzine & Ysseldyke, 1983; Johnston, McGillFranzen, & Allington, 1985; Leinhardt, Bickel, & Pallay, 1982; Stainback & Stainback, 1984) there is little theoretical or empirical evidence to support any of these assumptions. These assumptions were not created by the Federal policy making but they have surely been maintained and strengthened by them.

The influences that have led to the fragmentation of support instruction services have fed and nurtured each other.

As educators, sociologists, psychologists, economists, and others, have created their various rationales for explaining school failure, a variety of beliefs about the etiology of school failure have arisen and shortly thereafter appears Federal policy. In our analysis of explanations for school failure we traced the evolution of economic disadvantagedness as a primary rationale and the resultant development of the Federal Title programs designed to compensate for such disadvantagedness (Johnston, McGill-Franzen, & Allington, 1985). The number of publications in professional journals with both reading and disadvantagedness as key descriptors rose steadily for better than a decade but then gave way to another developing belief system.

This shift was evidenced in the rise in the number of professional journal publications using the key descriptors reading and learning disability. In the past decade the number of such articles has risen tenfold and 10 years ago replaced the previous standard of reading and disadvantagedness. In fact, articles on reading failure are now more frequent in journals published for special education and learning disabilities professionals than in journals published for reading professionals. These trends in publishing seem to mirror the categorical identification of students and the expenditure of funds for providing support instruction. That is, the recent rise in the numbers of children identified as learning disabled, and the related rise in expenditures for the services provided, parallels the increase in publication with a brief time lag. However, there is little evidence that the passage of P.L. 94-142 created this trend since the number of articles on reading and learning disability had reached significant proportions before the enactment of the legislation. On the other hand, the legitimization of the category through the development of Federal policy seems to have had an enormous effect. Prior to the inclusion of learning disability as a reimbursable category, relatively few school districts had any significant number of students so classified. Now the situation has changed dramatically (Johnston, McGill-Franzen, & Allington, 1985; Ysseldyke & Algozzine, 1982).

Even though the number of children living at the "poverty level" has risen above earlier levels the number of disadvantaged children served by Chapter 1 programs continues to decline as do the funds to support such programs. We see the trends as reflections of shifting social beliefs about reading failure; beliefs not born in Federal policy making but nurtured by it. To reiterate our earlier point, however, there is little evidence to support the notion that children identified as learning disabled exhibit any substantial psychometric or educational differences from economically disadvantaged children who experience school failure (Algozzine & Ysseldyke, 1983). Rather than new populations with newly discovered etiological bases for reading failure, what we have is shifting or developing social belief systems, that attribute reading failure to an ever increasing array of etiologies; etiologies invariably located in the learner. A common feature of these developing social beliefs and resultant intervention programs is the lack of concern for the possible deficiencies in the original educational environment in which the deficits were nurtured (Bogdan, 1983; Gelzheiser, 1985; Stainback & Stainback, 1984). When children fail to learn to read competently after some schooling we rush to categorically identify them with one program or another, but regardless of categorical identification, there seems little evidence of concern for adopting or improving the original educational program from whence they came. This "fix-it" mentality works against collaborative efforts to remedy reading failure because it presumes the etiology is centered in a deficit in the learner, not in the educational program. While it may be less distressing to the educational system to blame the victim, it is unlikely that wholehearted efforts for coordinated instructional planning will ensue until this belief system is modified.

While not as popular in the current debates the same could be said to be true of differences between migrant populations and either learning disabled or other economically disadvantaged non-migrant children, though there is a separate Federal program for that population also. The key qualities of effective support programs seem generally similar regardless of student classification (Leinhart & Pallay, 1982). Federal policy, then, by providing the various categorical programs has influenced the design of state and local programs but the policies seem to have mirrored emerging social belief systems. The development of the policies strengthened these social beliefs and categorical separation became even more evident and entrenched.

Compounding the problem has been the interpretation, or misinterpretation of Federal policy at the local level. The most obvious example is the "supplement-not-supplant" provision of Title I. There are numerous references in the literature to the misinterpretation of this regulation, suggesting commonly that the misinterpretation led to the widespread use of the pullout model for delivery of compensatory instruction (National Institute of Education, 1977b; Shulman, 1983). As Allington (1986) reports, this aspect of the regulation still seems widely misunderstood since better than one of three compensatory education administrators surveyed viewed the provision as disallowing non-pullout designs and congruent curricular materials. Nonetheless, we noted earlier that the pullout design also mirrored the most common organization for remedial services delivered in the university-based reading clinics that trained the reading specialist who organized the remedial services in schools. Thus, the small group, in a small room, with a specially trained teacher, using specialized curricular materials and methods fit well into both the professional belief system and the Federal policy. This design is being perpetuated in programs for the learning disabled even though no similar Federal policy exists (Junkala & Mooney, 1986). In fact, Federal policy requires placement in the least restrictive environment as a matter of course, but the design of support services for the learning disabled leans heavily toward pullout from the least restrictive environment for services delivered in separate resource rooms. There are, undoubtedly, a variety of reasons why the pullout design has evolved as the most popular and some of these are related to Federal policies, but other reasons also exist (Bogdan, 1983; Lortie, 1976; Milofsky, 1976). While we do not wish to argue that non-withdrawal programs are inherently superior--they have their own set of problems--we do suggest that conguence between instructional programs is less likely to occur in pullout programs.

Legislation that presumes categorical identification and identifiable instructional needs based upon the categorical label will obviously shape the policies made at lower levels, especially if fiscal incentives are present (Johnston, McGill-Franzen, & Allington, 1985). However, as Leinhardt et al. (1982) argue, the established professional beliefs and alliances sustain and refine the policies made at the service delivery level. The separate Federal programs administered from different Federal offices often present a maze of conflicting information. This maze is often further complicated by state laws and regulations and state level interpretations of Federal policies. By the time the bundle reaches the local district, much less the local school building, the task of coordinating may seem unmanageable. While greater attention to the coordination of support services at the Federal level would undoubtedly help, that simply will not ensure that services at the local level provide coordinated and coherent instructional environments for the children served. Our pessimism should not deter any attempts at clarifying Federal policies but, we believe that it will take a major reconceptualization of both reading failure and support program design to undo what has already been so unfortunately achieved.

Some Alternative Assumptions and Practices

Instructional Congruence

A number of the works which we have reviewed have stressed the importance of coordination between instructional programs. Few have described the features of coordinated programs. Some have discussed the coordination in terms of the congruence between the curricula in the two contexts (Allington & Shake, 1986; Johnston, Allington, & Afflerbach, 1985). However, exactly what it means for instruction to be congruent has not been made clear. For example, we cannot see a remedial reading teacher bound to replicate a classroom reading program which is unsatisfactory. Also, we would not like to see a language-experience approach in a classroom program prevent the use of predictable language texts in the remedial program. Thus, we need to clarify the notion of congruence beyond simply "more of the same."

Perhaps we should explain our notion of what would be appropriate before addressing what we feel would be inappropriate. We view literacy development in terms of broad concepts about communication and social and personal development. Within these higher-level concepts lie a substantial variety of conceptual and procedural knowledge which individuals integrate in the pursuit of various goals in various circumstances. The individual skills, unorganized and unintegrated, are of limited help. Similarly, they are of little help if they are not automated, or if they are used inflexibly. Optimally, children will develop within a balanced language arts program. In reading for example, by balanced, we mean a program which emphasizes a variety of means of controlling the difficulty of text, such as: predictable language, familiar content, prereading, rereading, word frequency, meaning unit repetition, interest level, recency, and so on. Through a careful balance of such means of controlling difficulty, children can develop their weaknesses while being allowed success through the support of their strengths. For example, in the language experience side of a program a child is supported by his personal knowledge, syntax, vocabulary, and the personalized nature of the text, while he or she works on developing an understanding of graphophonic relationships through writing. Patterned language reading materials on the other hand, support the child through the predictability of the language, while introducing new vocabulary, new syntax, and new experiences. It is not difficult to tell whether children are involved in a literacy related task. However, it is hard for researchers or administrators who do not understand children's literacy learning to tell a balanced literacy program from an uncoordinated one and a coordinated one from a rigid, unbalanced program.

There are several major elements in this congruence issue. First, there is congruence between curricula—what is to be taught, in what order, and using which materials. Second, there is the method of instruction. The actual techniques which teachers use to help children learn the curriculum. Conflicts arise in the following sets of circumstances which we have encountered all too frequently in school settings:

- when the sets of difficulty control procedures in the materials in the two settings are radically different, for example, when extreme orthographic regularity reigns entirely in one setting but word frequency and natural language rule in the other setting. In such a situation, the reading strategies which are learned and practiced in one setting will be extremely inefficient in the other situation. One might see such conflict in a school where the core curriculum reading instruction is based on the Scott Foresman Reading Systems (Aaron et al., 1971) and the support program reading instruction, offered in remedial or special education resource rooms, follows the DISTAR (Engelmann & Bruner, 1975) curriculum.

- when the hierarchy of learning assumed in the two settings conflicts as when one setting emphasizes decoding as the essence of reading while the other setting focuses strongly on comprehension. In one case, the development of prediction will be discouraged, whereas in the other context it will be encouraged. One might see such a conflict in a school where the Houghton-Mufflin basal is the source of core curriculum reading instruction and the Merrill Linguistic Readers is offered in support programs.

- when the strategies to be learned differ from one context to the other. For example, long division can be taught in terms of "borrowing" or through conceptually quite different procedures.

- when instructional strategies differ radically in the two settings. For example, when one setting depends entirely on direct instruction and the other setting depends on learner-directed instruction. In such a case one context will stress self-monitoring and self-correction, while the other will prevent them.

- when the terminology and metaphors differ in the two settings the child is likely to become confused about some of the concepts. For instance, use of a "word family" (e.g.ake, ame) approach to decoding is coupled with a synthetic phonics approach.

If the two parts of a program could easily be seen operating within a coherent classroom program, then they are more or less congruent. There is the risk that with widely divergent approaches the children will be unable to integrate what they are being taught and will develop confused notions of the nature and purposes of reading. Vernon (1958) has described the problem as one of "cognitive confusion", and some of its consequences have been documented by Johnston (1985). Thus, if two parts of a program are necessarily separate, then some part of the program needs to be devoted to clarifying how the parts fit together, otherwise, the integration, the tough bit, is left up to the children. It also seems likely that conflicts stemming from programmatic differences will be intensified with factors such as anxiety, which are often quite severe for failing learners. It is probably more efficient to ensure congruence from the outset.

We feel that the major aspect which affects these dimensions of instruction is the teacher's expertise. If we can consider both classroom and support teachers as experts, then presumably, the support teachers is more expert than the classroom teachers in a specific area such as reading or math curriculum and instruction. There are, of course, exceptions to this, and too often, poorly trained teachers' aides provide the remedial instruction. Experts differ from novices in three major ways. They differ in terms of the extent of their knowledge, the structure of their knowledge, and the flexible use of their knowledge (Chi, Glaser, & Rees, 1982). It is their knowledge of teaching of a specific content like reading, and how children learn, which makes them choose materials and techniques (to the extent that they perceive that they have choice in each area). The structure of teachers' knowledge becomes apparent when they teach and when they choose materials, and the differences can be substantial (DeFord, 1985). Unfortunately, these ideological differences are most pronounced at the beginning stages of reading and, as Carter (1984) and Clay (1982, 1985) have pointed out, the earlier remedial programs begin, the greater the likelihood of success.

In other words, there are essentially two curricula involved. One is the explicit curriculum expressed by the school curriculum, and the other is the implicit curriculum held in the knowledge structures of the teachers. Program planning decisions can be made on the basis of the explicit curriculum, but the moment to moment decisions must be automatic or intuitive, and will be made on the basis of the implicit curriculum. When the congruence issue is viewed this way, the clarity and coherence of the overall school curriculum becomes important. There should be a clear, explicit, reading curriculum including the philosophical underpinnings of the curriculum, and it should encompass descriptions of how students with special needs instruction should differ from that of regular students needs, if it is indeed felt that it should differ in some way.

If a school seriously adopts a basal series, there is likely to be some coherence in the overall reading instruction provided. Indeed, some evidence suggests that "effective schools" are more likely to have a school-wide adoption than are less effective schools (Clark & McCarthy, 1983). This may be because the basal curriculum, while constraining decisions, does provide a more coherent school-wide curriculum than an "every teacher for him/herself" situation in which no common basal or other unified curriculum exists. However, a unified curriculum, whether or not achieved through a basal series, does not ensure compatibility of the curricula implicit in the teachers' knowledge structures, which is a much more difficult congruence to attain. For example, with respect to reading instruction, the training undertaken by teachers preparing to serve learning disabled students is generally substantially different from that undertaken by teachers training specifically to serve students with special needs in reading. This difference is ideological and influences how students' behaviors are interpreted, and how they are seen as different from other students (Ysseldyke & Algozzine, 1982).

It seems that the effects of teachers' ideological differences might be minimized through a clear curriculum, cooperative planning of that curriculum, and coordinated inservice programs. Many schools' curricula are defined by the basal series adopted, and serious school-wide adoption constrains some dimensions of classroom instruction. For example, each basal series opts for particular forms of text difficulty control. It would not be easy for a teacher to stress prediction and self-monitoring if the basal program selected and enforced were the Merrill Linguistic Series for which unpredictable text has deliberately been constructed, difficulty control being through restriction of the letter-sound relationships. In the same way, a developmental reading program based on reading trade books stressing self-monitoring and self-correction in the classroom would seriously conflict with a direct instruction program such as DISTAR (Engelmann & Bruner, 1975) in the support program, which stresses immediate feedback by the teacher where errors occur.

Returning to the question of balance then, an expert remedial teacher might observe the classroom teacher's reading program and decide that it is a balanced program. But that within that program, a certain student requires special attention in a specific area which might not be possible to attend to in the classroom, at least to the level that is necessary for that student. Such instruction would include the broader framework particularly by highlighting how the focal points fitted into the broader program. For example, the student may require additional attention to hearing sequences of sounds in words. This can be difficult for some children to pick up in a group. The teacher could work on that in the context of writing, and/or reading real stories. On the other hand, observation of the classroom instruction might reveal an unbalanced program. For example, suppose a classroom teacher's program consisted almost entirely of phonic analysis. Difficulty control in such a program is accomplished by constraining the letter-sound relationships, and success is defined by accurate pronunication of words. A reading teacher, can decide to work with the classroom teacher to help balance up the program, or can try to shore up the balance independently. The former involves extensive communication, which currently seems lacking. The latter requires not simply teaching the untaught skills, but teaching in such a way that the instruction ensures the integration of that learned in the regular program with that learned in the remedial program. Again, this requires knowledge of the other program, which implies some form of communication.

The implication here is that the individual responsible for program coordination must have extensive knowledge of how readers develop and of frameworks of instructional techniques. At the same time, such individuals must actively encourage communication between teachers in regular and remedial programs. It is not possible to attend to the relationship between the learning in two programs if one is only aware of the activity in one of the programs, as is frequently the case (Johnston, Allington, & Afflerbach, 1985). There needs to be extensive investigation of ways in which cooperative instructional programs can be developed. This raises the issues of communication and awareness of other teachers' approaches, as well as that of compatibility of knowledge structures. It seems likely that the more congruent teachers' knowledge structures are, the less time is likely to be involved in communicating and coordinating programs, and the more congruent the programs are likely to be in the first place. Similarly, when two teachers have an extensive knowledge of how each other teaches, even if their knowledge structures differ, they are more likely to be able to build bridges between each other's programs.

Current "cellular organization" (Lortie, 1976) of classrooms tends to isolate teachers one from another so that they do not develop knowledge of each others' teaching approaches. The use of in-class approaches for support program instruction may foster a greater knowledge of program compatibility, but because of ego defense may actually reduce the likelihood of cooperation unless the arrangement is self-induced. Various contextual factors seem likely to influence the probability of teachers cooperating. For example, competitive organizational structures such as those set up in some career ladder systems seem less conducive than do cooperative organizational structures (Ames & Ames, 1984). These are matters which need some serious consideration in future research.

Opportunity to Learn

Although support for the notion of differential instruction for differential categories of students has been seriously underminded (Stainback & Stainback, 1984), the residual effects of the approach are still evident in the training of many specialists and teachers, and it remains implicit in the structure of P.L. 94-142. In some respects this situation almost guarantees a lack of congruence between instructional programs. We believe that there is reasonable evidence that this situation deserves to be remedied. On the basis of the lack of support for differential instruction, and the rather extensive evidence that sheer opportunity to learn is a powerful explanatory variable (Leinhardt & Pallay, 1982), we think it would be better to begin planning support curricula with the assumption that the differences between the special needs and regular students reside largely in the need for differential opportunities to learn (Good, 1983; Crawford, Kimball, & Patrick, 1984; Hiebert, 1983; Zigmond, Vallecorsa, & Leinhardt, 1980). Such a reevaluation may change the nature and consequences of student labeling practices.

Under such an assumption there is every reason to coordinate instruction so that program effects are cumulative rather than fragmented. In addition, there is greater reason to support unified planning of academic programs which include special needs students and their teachers from the beginning. If the mystique surrounding the nature of the differences between the regular and special needs students is broken down, there is likely to be a greater sharing of responsibility. If the root of a child's reading problem is perceived to lie in neurological causes, then not only is differential instruction seen as a logical consequence, but the problem goes beyond the training of the classroom teacher and out of his/her responsibility. It is time to reexamine the assumptions underlying the legislation and its interpretation.

Supplement-not-Supplant

A major dictum of the Chapter 1 regulation is the notion that remedial assistance should supplement and not supplant the regular instructional efforts. The intention was to prevent schools from simply using Federal money to fund existing instructional efforts. As we have already noted, interpretations of this regulatory language have produced aberrant instructional situations. For example, some believe that it prohibits in-class programs and others believe that it insists on different instructional methods and materials (Johnston, Allington, & Afflerbach, 1985). However, the basic problem is that within a given school day, unless the school day is extended for remedial children, some teacher's efforts must generally be supplanted in order to provide remedial support. Thus, the notion of supplementation needs to be examined in terms of the alternatives open to school systems.

One approach to this is to stagger the school day to allow some students to arrive and leave before others. This allows for reduced teacher-pupil ratios during parts of the day. Such an approach has been used, for example, in Sweden (Clay, 1979). Similarly, it has been shown that using Chapter 1 money to substantially reduce the teacher-pupil ratio across the board can produce gains for the low-achieving students (Doss & Holly, 1982). Leinhardt (1980), however, notes some potential risks in this approach derived from lowered expectations. In some ways, such an approach reduces the need for coordination since only one program exists. For teachers who know what they are doing, and who do not reduce, but rather increase the level of instruction, this seems to be an option well worth exploring. We are not yet convinced that this approach will make a difference for teachers with limited expertise.

Research suggests that within a fixed-length school day, it is also possible to supplant regular instruction somewhat, provided the displacement is relatively short-lived. The critical features which make it short-lived have to do with the fact that the remedial students must learn substantially faster than the regular students. The faster they learn, the briefer the supplantation. The conditions which produce this accelerated learning seem to include efficient, effective instruction focusing on independence, low teacher-pupil ratio (particularly one-on-one), and early intervention (Carter, 1984; Clay, 1985). For example, under these conditions, Clay (1982; 1985) has shown that for the children making the least progress in literacy development, one-on-one instruction for 30 minutes per day, four days a week, can bring most of them to levels comparable to the average group of students who need no further support. It is important to note that this approach took place within a context of strongly comparable teacher knowledge structures, extensive cooperative arrangements between teachers to release one another for parts of the school day, and considerable administrative support. However, with respect to the present discussion, the important point is, that if regular instruction, in whole or in part, is temporarily replaced with highly effective individual instruction, the problem of congruence is substantially reduced except for the problem of reintegration into the regular curriculum, which is, of course, the goal of the program and remains critical. The reintegration largely means that the instruction should emphasize, and spend most time on, the reading of connected text, which is what will be required in the regular classroom.

Currently, the likelihood of such intensive, preventive approaches being implemented seems minimal. The notion of prevention appears to require resource investment where there is not yet (and may never be) a problem. In times of shrinking resources such as the present, this does not seem likely to gain favor. While one-on-one instruction has received bad press in some of the literature (see for example, Rosenshine & Stevens, 1984) it appears that there may have been some overgeneralization from classroom studies. The work of Bloom (1984) and Clay (1982, 1985) strongly favors intensive, early one-on-one-tutoring, and the Title I evaluation work of Carter (1984), Crawford et al. (1984), and Guthrie, Seifert, and Kline (1978) provides additional support for low teacher-pupil ratios, preferably one-on-one.

Early intervention is not encouraged by current assessment practices (Johnston, 1984) or by funding policies and practices, but there are some serious disadvantages in delaying intervention. Less able readers normally learn more slowly in their regular classroom program than do other students. Thus they fall increasingly further behind. This means that even with accelerated learning, later intervention will require longer intervention in order for students to catch up. In addition, the secondary characteristics which such students pick up as a consequence of continued failure, extend even further than the necessary length of the intervention program (Johnston, 1985; Johnston & Winograd, 1985). Associated with this, remedial teachers currently have to deal with up to 10 children at once, and because of scheduling problems, frequently the children range over several grades in performance level. The size and heterogeneity of the reading groups often scheduled for remedial teachers makes faster learning impossible. Each of these factors simply compounds and prolongs the coordination problem, thus we suggest that along with consideration of program coordination, additional assumptions which impact upon the length and likelihood of coordination should be re-examined.

Summary and Conclusions

In this paper we have reviewed the available research on instructional coordination, and tried to clarify what coordination is, what it does, and what is likely to maximize its occurrence. While there are various levels of both vertical and horizontal coordination, our particular focus has been on the lowest level of coordination, that which impacts the individual student's learning directly. We have examined coordination as it impacts the quality of instruction delivered to students.

We have stressed the importance of policy making at the lowest levels, by direct service providers in school buildings, more than policy making at either state or Federal levels. Nonetheless, it seems that state and Federal policy does exert influence on the policy making in schools. Thus, we suggest that policy generated at the upper levels must emphasize the following:

- The policies generated by several Federal agencies and programs serving children with exceptional educational needs must provide a coordinated and coherent focus for lower-level policy makers.

- The policies generated at the Federal level must focus more on "service quality" and less on separating funds by categorical programs. The latter seems to emphasize clear "audit trails" and work against the design of district-wide or school-wide coordinated efforts for providing appropriate educational support services to a wide variety of children exhibiting any of several educational service needs.

- The policies generated at the Federal level must emphasize the similarity of instructional needs amongst the children served by the several current categorical programs.

To achieve these shifts may require a number of organizational rearrangements in the Department of Education. These might include:

- Merging the agencies in charge of compensatory education, of the handicapped and vocational education, to name a few. Such an agency would be responsible for developing policy that emphasizes school-wide (or district-wide) efforts to use Federal funds to provide a comprehensive and coordinated support program for all children with exceptional educational needs regardless of the current label.

- Alternatively, the Office of the Secretary of Education could emphasize coordination amongst the several agencies and a better articulation of Federal roles in achieving effective schools for the various "at-risk" populations. We see, for instance, a distinct potential for the announced "effective schools" initiative of the Department of Education. Were these awards to require demonstrated coordination of all Federal programs funds and to emphasize the "service quality" improvement to be achieved by such coordination, the Department of Education would be clearly signalling a shift in previous policy emphasis. As we have noted before, such policy making at Federal levels will undoubtedly produce new policy at lower levels and we, perhaps naively, suspect that lower-level policy making will also shift noticeably toward coordination and coherence in the design of support programs for children with exceptional educational needs. Also, the "effective schools" initiative is a small enough target that we may be able to create local policy shifts in districts that are interested. This may need enabling legislation or regulatory exceptions on trial bases. But we think it is likely to be more successful if the local districts create models, rather than trying to improve the models from above. Subsequently, the most effective local efforts might be encouraged and disseminated.

We expect none of this to be easily achieved, and most difficult may be obtaining shifts in the content of instruction offered in support of regular programs, in order to produce an integrated program of instruction for the individual student. We have pointed out that studies that have examined coordination among regular and various support programs, regardless of definition, have invariably found it rare, but where evident, important to children's learning. However, we have found that there is little clear description of exactly what coordinated instruction would look like short of "more of the same". While we have made an attempt, there needs to be research directed toward clarifying this issue. There are sufficient ideological differences over the nature of reading instruction that it would be inappropriate for Federal or state legislators to intervene in this area. However, whatever the ideology, it does not seem unreasonable that within a given school, for a given pupil, the instruction be coherently articulated. We feel that curricular coordination may be further encouraged at the local level through some of the following:

- It seems likely that explicit, and cooperatively engineered curricula with similarly explicit rationales would go a long way toward ensuring instructional congruence.

- While unified explicit curricula would help, they would certainly not guarantee coherently articulated instructional services. A serious stumbling block remains in the form of teachers' knowledge structures, or what might be termed the "implicit curriculum". This implicates teacher training and programmatic teacher inservice development. Teacher training initially develops these knowledge structures, and subsequent teacher isolation, issues of "turf", and the other institutional and policy issues discussed, perpetuate the differences.

- Communication among teachers, both regular and support, might be fostered in a variety of ways including requiring regular conferences between teachers involved with specific special needs children. Time must be specifically allocated to this activity but time allocation is not enough. All teachers will have to acquire a sense of ownership of the problem student and his or her instruction. Cooperative planning may not be easily accomplished but it must begin.

- Required observation of special needs student performance in another class setting is likely to provide better knowledge of different components of the child's actual curriculum, and concrete grounds for discussions between teachers.

- Continuous process records of children's development may be very helpful in inducing curricular alignment. For example, such records might contain samples of the child's writing, and running records of reading behaviors (Clay, 1985) over time. If teachers are required to keep such records, and provided with the expertise to do so with minimal additional effort, the nature of the files will focus instruction, and the data within the files will give a more concrete foundation for teachers' discussions of students' progress and difficulties.

We have argued that, in addition to attempts to improve coordination, it would be helpful to have concurrent progress toward reducing the demands on coordination. In particular, we have stressed the need for:

- Clearly developed district policies supporting coordination.

- Early attention to difficulties with an emphasis on prevention.

- Short-term, highly intensive intervention in order to eliminate the need for support services as quickly as possible.

- Low teacher-pupil ratios, particularly in the early stages, and even one-on-one support instruction where possible.

- Intervention programs which focus on student independence so that students might return to the regular instruction and maintain progress.

- Intervention programs that focus on service quality more than categorical compliance. Again, we want to stress that the bottom line in any attempts to improve coordination is the ultimate effect on student learning.

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CHAPTER 1 AND THE REGULAR SCHOOL: STAFF DEVELOPMENT

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CHAPTER 1 AND THE REGULAR SCHOOL: STAFF DEVELOPMENT

Introduction

This paper presents a point of view about effective staff development for teachers and uses that point of view to argue that Chapter 1-related staff development practices should be integrated into Chapter 1 school settings. This integration can only be accomplished, I believe, if the practices and programs are made available to all persons in the school, although modestly differentially across role groups, rather than only to Chapter 1 teachers, administrators, and aides. This assertion is supported by research findings, by propositions about school and instructional effectiveness, and, to a degree, by common sense. Relevant literature is used to buttress the position that Chapter 1 staff development should be school-wide, not targeted to special educational personnel groups.

It should be understood at the outset of this paper that staff development is not a "mature" field of study; the body of research-derived knowledge about the nature and effects of staff development programs and activities is currently sparse (Koehler, 1983). Therefore, it is necessary to use a good deal of research with objects other than staff development to create a conceptually complete argument for this paper. These other bodies of research findings include those related to effective teaching, effective schools, school change, and schools as organizations. As will be argued, knowledge from such studies suggests strongly that staff development conceived as school (versus classroom) activity is potentially powerful for the accomplishment of Chapter 1 objectives.

A Conceptualization of Staff Development

Staff development is considered for this paper to be any systematic attempt to alter educational professionals' behavior, knowledge, and/or values toward some specified end (Griffin, 1983). Two conceptualizations of how this alteration can or should be brought about are present in the literature and observed in practice. (The conceptualizations are not "pure types." That is, each will contain elements of the other but the dominant mode will be one or the other.)

The most typical conceptualization of staff development is one that has specified content and process, with the emphasis upon some predetermined content (Howey & Vaughan, 1983). Delivering staff development this way suggests that there has been some decision as to what teachers, for instance, ought to know or believe or be able to do and that the principal issue for the staff developer is to find the most efficient and effective delivery system. An example of this might be the decision by school district officers that teachers should be able to deliver direct instruction in a mastery learning-oriented reading program. Subsequent to this decision, process or delivery decisions are made about such issues as who should teach the teachers, for what length of time, using what materials, in what settings, with what follow-up, and so forth. In such instances of staff development, using research terms, the educator is the subject of an intervention planned, executed, and occasionally, evaluated by others.

An emerging alternate conceptualization of staff development differs sharply from the one noted above. Instead of concentrating upon the development and implementation of a content-driven intervention to be introduced into teachers' or others' professional lives, attention is given to manipulating the environment in which teachers do their work such that the work is positively affected (Griffin, 1983). An example of this might be activity centered on decreasing the isolation of teachers from other teachers in the belief that more opportunities for professional collegiality will promote school-wide understandings of problems and prospects, serve as a stimulus for teacher collaboration on schooling issues, make possible coherent policies and practices across classrooms, make the school a more pleasant and rewarding place for adults, and so on. Naturally, enacting such a strategy will eventually call for the introduction of "new" content, but that introduction is in response to, rather than the cause of, the structural manipulation of school context variables (Stallings, 1981).

This context conceptualization of staff development has both intuitive and knowledge-based appeal. Observations of staff development programs for practicing teachers support the conclusion that large numbers of externally-developed interventions are unsuccessful (Goodlad & Klein, 1974). The lack of effectiveness is blamed variously on lack of "ownership" by teachers of the central components of the intervention, absence of consideration of the situation specific context variables across schools, the sporadic nature of opportunities to learn about or do what is expected (e.g., the one-time workshop, a speech by a visiting dignitary), the expense associated with providing another layer of school activity on existing programs, the relative dearth of technical expertise available given any single innovation, and problems associated with maintenance of the change by school-external monitors. In the best situations, programs that are termed effective are more often than not those that have undergone mutual adaptation, changes in intent, procedures, or outcomes as a consequence of the influence of the contexts into which they were introduced (Berman & McLaughlin, 1975).

The potential of the context conceptualization builds to some extent from what has been learned from the so-called "effective schools" research. This body of research suggests that there are school context variables that are consistently associated with success. (The definition of school success is more often than not pupil scores on tests of academic achievement, usually reading and mathematics (Barnes, 1981). Although there are conceptual, philosophical, and methodological difficulties in this line of research, the general agreement across studies supports the conclusion that attention to context in general and to specific manifestations of certain context variables in particular is a fruitful way to think about increasing the power of the school to positively affect pupil outcomes (Purkey & Smith, 1983).

What does this have to do with staff development, particularly staff development aimed at increasing the effectiveness of Chapter 1 programs? Quite simply, if the school context is such a powerful influence upon the outcomes of educational programs, attending to that context as staff development seems a reasonable proposal to implement and investigate (Schiffer, 1980).

Some years ago, I claimed that there should be two major goal areas for staff development activity (Griffin, 1979). The first goal area included conventional goals such as improving pedagogy, introducing innovative curricula, creating more effective testing procedures, and the like. This goal area includes content that is similar if not identical to the content-process conceptualization discussed above. But it was seen as being intimately connected to and influenced by another goal area. Goal Area Two included contextual goals for staff development, including such items as increased collegiality, greater teacher participation in school decision-making, increased cosmopolitanism of school persons, and so on. The argument is that the content and process expectations included in the first goal area will be heavily influenced, in terms of success, by the degree of presence of the context variables in the second. For example, to expect implementation of new curricula in a school, it is important that the school be characterized by an ethos of inquiry and experimentation (Ward, Pascarelli, & Carnes, 1985). The development of a consistent and articulated school testing program calls for a professionally collegial teacher group. And undergirding both goal areas, the content-process one and the context one, is the structural properties of schools in the forms of governing structures, reward systems, communication systems, evaluation schemes, and the like.

What this briefly described model of staff development accomplished for me was the integration of (1) what should be the objectives of attention, (2) which context conditions would contribute to successful implementation, and (3) the organizational properties that had to be in place in some coherent form to promote success. The passage of time since this sketchy integrated model was advanced has provided much richer evidence to support it as a reasonable way to think about staff development.

For Chapter 1 settings, the context approach seems reasonable from several perspectives. First, it is acknowledged that the Chapter 1 programs are not well-developed educational or instructional interventions (Carter, 1984). My understanding of the Chapter 1 expectations is that the provision of the services demands less that a particular brand of service is made available to eligible students than that some service that is logically related to the needs of students is made available. This rather "loose" expectation seems to rest for success upon the wit and the will of local and state education agencies to define the nature of the Chapter 1 services (McLaughlin, 1982). It is reasonable to assume, given certain school change research findings, that the interventions that arise from the school context into which they will be introduced has more chance of successful implementation than interventions that are prescribed from district or state levels of decision-making (Ginsburg & Turnbull, 1981). This is not to deny the appropriateness of such agencies guiding local decision-making and implementation with rules and regulations in the forms of guidelines. The argument, though, is that these rules and regulations should be ones that cause teachers and administrators to work together within a given context such that all of the appropriate context influences can be brought to bear upon the provision of educational opportunity for Chapter 1 students. We do know that most schooling issues are site-specific; although there are generic properties of schools, how those properties are made present is a function of a particular school environment (Romberg & Price, 1983). This is a compelling reason for formulating situation-specific interventions.

Second, although there are exceptions to this generalization, Chapter 1 students tend to be located disproportionately across school settings. In some schools there are no such students, in others they make up a significant percentage of the population. The latter case seems to be more common in urban centers than in suburban or rural settings. When Chapter 1 students are indeed, a majority or close to a majority in schools, it is reasonable to assume that the entire school faculty and administration should be preoccupied with their instruction. It is acknowledged, for instance, that "regular" and Chapter 1 teachers historically and currently are at odds with one another in intellectual, practical, and collegial ways (Kimbrough & Hill, 1981). This, I believe, is a natural consequence of ignoring the concept of the school as the ideal unit for change and effectiveness, as opposed to consideration of individual classrooms, teachers, or instructional programs as the most desired unit (Goodlad, 1975). The student should be the focus for instructional improvement and the school should be the organizational mechanism to impact upon that focus. For a student to receive qualitatively different instructional attention from the regular and Chapter 1 teachers is to create a dysfunctionality that rebounds to the detriment of student affect and intellect. By using the school as the unit for better understanding and acting upon the learning problems of the Chapter 1 student, it would be possible to reinforce and strengthen instruction across settings (e.g., the conventional classroom and the pullout program). The teachers in each setting would understand what is going on in the other and act upon that knowledge through reinforcement, extension, and enrichment.

Third, school level leadership can be made more efficient and effective if it is focused on context issues that are school-wide than it is expected to shift intellectual and programmatic gears according to the requirements of numbers of school-based programs (Griffin et al., 1983). The recurring criticism of school leadership as lacking in effectiveness surely will not be reduced by expecting that leadership be distributed across a number of intentions. Integrating Chapter 1 program goals and practices into across-school activities such as staff development has promise for both promoting coherence for students, as noted above, and increasing efficiency and effectiveness of leadership behavior.

Fourth, with the exception of reduction in instructional group size, it can be argued that the instructional strategies most predictive of success in pullout programs for Chapter 1 students will be equally effective in conventional classrooms, particularly in those schools where the Chapter 1 students are located in significant numbers. Much of the so-called "teacher effectiveness" research was conducted, in fact, in schools with characteristics markedly like those in Chapter 1 settings (Barnes, 1981; Good, 1982; Rosenshine, 1983). To use these research findings only with Chapter 1 teacher specialists, as the content of staff development, does a distinct disservice to teachers who also work with Chapter 1 students in conventional classrooms. Again using the argument that the focus of staff development should be in largest measure upon student outcomes, helping teachers to come to grips with instructional strategies that impact those outcomes should be school-wide, not selectively determined. Although it could be argued that such help could be provided for one group and then another (as opposed to all together), this seems needlessly cumbersome and in compliance only with Federal rules and regulations rather than in compliance with common sense.

Fifth, it is widely understood that schooling for any youngster is made up of a number of interacting variables (Perrone & Associates, 1985). A practice that depends upon selection of only one of those variables, a Chapter 1 pullout program for example, to make an observable difference in student outcomes is naive at best and mischievous at worst. It is naive because it denies the influence upon achievement of integrated curriculum offerings, consistent instructional strategies, peer relationships, school organization, and the like. It may be mischievous because it sets up the intervention for limited success or failure. As some of the formal observations of Chapter 1 suggest, the isolation of the programs from the ongoing instructional system of the school puts many participating youngsters at educational risk, particularly in the social sciences and the arts and humanities. Therefore, to concentrate staff development aimed at increasing the power of the school as a whole (versus only Chapter 1 designated teacher specialists) seem to be a more potentially powerful influence on Chapter 1 students.

Last, the preceding discussion leads to the conclusion that the most typical Chapter 1 intervention, pullout programs whereby Chapter 1 students are removed from their conventional classrooms for "special" instruction, may not be the best way to promote the goals of Chapter 1. Although small-group instruction for Chapter 1 students may be an important piece of the instructional program, it is theoretically and practically problemmatic when seen as the entire intervention. Certainly, decreasing the numbers of students in an instructional group has the promise of increasing instructional attention per student. This is a desirable strategy. Its desirability, however, depends in no small measure upon the place it has in a larger instructional context, a school-wide strategy that puts considerable intellectual and practical force behind increasing educational opportunity and outcomes for all students, including those designated as Chapter 1 participants (Sarason, 1971).

Clearly, I am arguing in this paper for a revision of staff development program guidelines related to Chapter 1 programs. The argument suggests that staff development should logically be focused upon comprehensively enhancing the educational opportunity of students identified as eligible for Chapter 1 services; that such students are quite often significant percentages of schools' populations; that segmentation of Chapter 1 interventions and, by association, staff development to increase the power of the interventions is to ignore the complex of interacting school context variables with influence upon pupil outcomes; that school-wide staff development will promote coherence of approach and strategy related to all students, including Chapter 1 designated participants, and that the school is the logical unit for change, in this case changing the educational opportunities made available to Chapter 1 students.

The next section presents research and propositions in support of this conceptualization.

Staff Development-Related Research

One of the most compelling longitudinal studies of school change and improvement was conducted by Goodlad and associates in the late 1960s. This effort involved eighteen schools from a like number of school districts and studied the change process, with particular attention to teacher change, over a five-year period (Bentzen, 1974). Among the findings of the study are two concepts related to successful school and teacher. First, the school is the logical unit for change and, second, the change process is characterized by a cycle of teachers' group behavior. The change process in successful schools was guided by attention to what was called DDAE: dialogue, decision-making, action, and evaluation. Although the phases of the process often overlapped or moved backward and forward in fits and starts, teachers and administrators in these schools engaged in extensive talk, formally and informally, about school problems and issues (dialogue). They then made decisions about how to move ahead toward acting upon the issues (decision-making). The decisions led to concerted and focused activity (action). And, finally, after a reasonable amount of time had been devoted to the issue-related activities, staff members reflected upon their impact (evaluation). This was a naturally occurring cycle, not one that was induced into the school settings, and was consistently associated with successful change.

Building upon this research, two comprehensive research programs sought to both refine the DDAE conceptualization and introduce it experimentally into existing school situations. The Interactive Research and Development on Teaching Project (IR&DT; Tikunoff, Ward, & Griffin, 1979) was designed to engage school persons in a systematic assessment of school and classroom problems, design methodologically and conceptually rigorous attempts to resolve the problems, collect relevant data, and draw conclusions that would be of use to school and classroom colleagues. Although the IR&DT work was designed initially as an alternate means of knowledge production, it was soon discovered that it contributed significantly to teacher participants' professional growth. That growth was characterized by a broader awareness of the school as a dynamic context for learning and teaching, more skill in manipulating school variables toward the resolution of persistent problems, increased sense of professionalism by participants, and greater teacher efficacy. (Interestingly, one of the participating schools was involved in Chapter 1-like interventions and focused its interactive research and development attention on increasing instructional time for students through reduction of classroom interruptions. This reduction of non-instructional use of teacher and student time was seen as a major contributor to the success of the instructional programs over time.)

Another research program, Changing Teacher Practice, was conceptualized as a school-level intervention through which school principals, as a consequence of a five-day immersion in effective teaching and effective leadership research findings, developed plans for working with their teachers toward introduction of the teaching findings into classrooms (Griffin & Barnes, in press). Although the research team never worked with teachers, only with principals in a workshop setting prior to the opening of the school year, the teachers did, in fact, alter their teaching toward alignment with research findings regarding teacher effectiveness. The principals who were most successful in working with teachers toward this end were the ones who most systematically used the research on leadership findings to guide their interactions with teachers. For Chapter 1 purposes, the study is also significant in that the effective teaching research findings are mostly based upon classrooms in which teachers worked effectively with low socioeconomic status (SES) and predicted (but not realized) underachieving youngsters. Also, the findings were fairly readily introduced into both Chapter 1-like and upper SES, high student achievement schools with positive outcomes.

A number of school level variables are fairly consistently associated with school success (Purkey & Smith, 1983). For the purposes of this paper, the variables included here are those that have some logical relationship to staff development activities. In line with the argument presented earlier, they are also ones that demonstrate the influence of the context upon teacher growth and student achievement. They offer further encouragement to those of us who believe that staff development must be a well-understood school-wide strategy rather than a segmented one. Briefly, the research suggests that:

- the school principal is a key actor in bringing about school success;
- teacher growth is most probable when teachers have systematic and consistent opportunities to interact around professional, school-based issues;
- school success is influenced by the presence of school-wide goals and, in turn, school-wide goals are developed as a consequence of professional collegiality among teachers and administrators in schools;

- the presence of school goals related to academic success is associated with evidence of that success;

- staff development success is associated with available opportunities to link teachers with in-school and outside-of-school technical assistance.

The list is illustrative rather than comprehensive. What it suggests is that, as Purkey and Smith (1983) have claimed, the classroom level behaviors of teachers and, to some extent, students are influenced by school level variables such as principal behavior and what can be termed "ethos" variables such as expectations for DDAE, professional collegiality, participatory goal setting, and so on. Naturally, a school principal, in most instances, can manipulate the school variables more readily than any other individual member of the school culture. In effective settings, though, that manipulation is acted out more as reasoned professional interactions than mandate, more as problem identification than solution by fiat, and more as creation of opportunities than prescriptions for practice. In other words, the principal can control the environment such that the requirements and regularities of the environment become the content and process of a staff development strategy.

The principal engages in this context control, admittedly with others, through the exercise of leadership knowledge, skill, and disposition. (The list below is a synthesis of findings from a number of sources, including Berman & McLaughlin, 1974; Gross, Giaquinta, & Bernstein, 1971; Hall & Loucks, 1981; Stallings, 1981; Little, 1981; Williams, 1983). She/he

- focuses on teacher behavior;

- identifies specific, concrete resources, and available technical assistance;

- provides teachers with opportunities to interact with one another about teaching and schooling;

- provides teachers with opportunities to plan together;

- provides teachers with opportunities to implement their plans;

- diagnoses school- and classroom-specific norms of operation;

- uses teacher concerns as bases for staff development activities;

- works with teachers on adaptation of teaching strategies according to the characteristics of students, the classroom, and the school;

- provides in-classroom technical assistance to teachers;

- links teachers to technical assistance outside the immediate school environment;

- provides teachers with feedback which is consistent, objective, concrete, and focused;

- provides consistent, ongoing assistance to teachers;

- adapts his/her behavior according to personal and organizational characteristics or participants;

- uses teachers' time to deal with teachers' problems, issues, and concerns;

- demonstrates knowledge of the issue under consideration;

- engages teachers in problem identification, solution formulation, and testing activities;

- reflects upon the effects of his/her behavior and uses that reflection as a basis for decisions about maintenance or modification of that behavior (Griffin et al., 1983).

Obviously, these are not typical staff development strategies in the sense of a content-process model. They comprise a school context plan of operation, however, that has been shown to be influential upon the way teachers go about the business of teaching. In effect, the principal who uses these behaviors interactively creates a school "press" for improvement and change, a context influence that is rooted in an understanding of how professionals best come to grips with increasing the power of their work and the professional authority related to that work.

In a prior review of staff development research, I concluded that there were 8 features of an effective staff development program (Griffin, 1983). They are:

1. It will be designed as a consequence of systematic problem identification by those most directly related to the problem.

2. It will be interactive.

3. It will mitigate to some degree status differences between teachers and administrators.

4. It will depend less on consultants and more on teachers and administrators for substantive and procedure guidance.

5. It will be formulated, in part, in terms of a careful analysis of the organization and the people for whom it is intended.

6. It will be formulated and monitored largely according to perceptions of the participants.

7. It will be flexible and responsive to the changes in participants and the changes in the setting.

8. It will be, within reasonable limits, situation-specific.

Recent analyses of the findings of three large-scale studies of teacher education (preservice, induction, and staff development for practicing teachers) revealed a set of program features that were consistently associated with success (Griffin, in press). (Success is defined here as being the blend of realized program objectives, positive perceptions of participants, and expert opinion.) The features are:

1. The program is context sensitive. Staff development efforts that do not take into account the significant characteristics of the contexts they are meant to influence are often either ignored or disregarded as meaningless by participants.

2. The program is knowledge-based. Although it should be axiomatic that some form of knowledge (research, theory, proposition, craft) should guide staff development work, it is not unusual to find a strange admixture of opinion or an incoherent blend of competing claims at the core. This knowledge base must be public and widely understood, even though it may not be universally believed to be the best knowledge.

3. The program is participatory and collaborative. Throughout this paper, it has been implied that

teachers should be more than just subjects of staff development. In the research reviewed for this set of features of successful programs, it is clear that the greater "stake" the teacher has in the program, the more probable the program will succeed. This participation and collaboration appears to be a key ingredient in promoting teacher growth.

4. The program is ongoing. A major complaint by teachers is that their opportunities to engage in staff development are not coherent over time. A workshop here, an institute there, a visiting expert yet somewhere else do not add up to a coherent program. Successful programs move over time in ways that are not disconnected events.

5. The program is developmental. As noted immediately above, successful staff development is coherent over time and that coherence is most often a function of the developmental feature. That is, the connected processes and events aim toward something, such as accumulated knowledge and skill in a well-defined domain of professional knowledge or behavior, and are based upon a conception of teacher growth and change.

6. The program is analytic and reflective. Too often school people are caught up in their daily activities to the extent that they have few opportunities to singly or collectively analyze those events and reflect upon their meaning. Successful staff development efforts include as major components time and rewards for standing back from the dailiness of schooling and using that ideological and temporal distance to stimulate analysis and reflection.

These features are ones that are most efficiently and effectively introduced and sustained at the school level. Of course, staff development programs even at the school level can have planned variations. Specially prepared experiences for grade level teachers or subject specialists or Chapter 1 resource teachers can be planned and implemented. The point to be made, though, is that these planned variations should fit within a school's plan for professional growth of its members and not be isolated from the larger context. This concentration upon integration, if research and intuition are accurate, should contribute to the influence of instruction on youngsters, the sense of professionalism of staff, the stimulation of a positive working climate, conservation of limited resources, and ongoing school improvement.

Conclusion

This paper has used research and propositions to argue that Chapter 1 staff development funds be used to integrate understanding of the special needs and prospects of and for Chapter 1 students throughout a school. Rather than isolate staff development opportunities within a Chapter 1 resource teacher group, it is believed more reasonable to extend those opportunities to all professionals. This argument is based upon the proposition that the school is a complex environment, composed of a number of interacting variables, all of which have some impact upon teachers and students. Staff development that focuses the environment in all of its contextual complexity upon students' academic and social advancement is believed to be more powerful than staff development that isolates teachers from one another, concentrates upon segments of curriculum and instruction, creates "minicontexts" that may be in contrast to the larger context, and dilutes rather than strengthens the accumulated power of schooling upon student outcomes.

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CHAPTER 1 AND STUDENT ACHIEVEMENT: A CONCEPTUAL MODEL

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CHAPTER 1 AND STUDENT ACHIEVEMENT: A CONCEPTUAL MODEL

For the past twenty years, the primary way the Federal government has addressed the problem of educating low-achieving students in elementary, middle and secondary schools in this country is by allocating funds to compensatory education programs. Beginning in 1965, remedial educational services were provided for these students under Title I of the Elementary and Secondary Education Act which granted Federal funding to local education agencies. The implementation of these services was improved in 1981 when the Education Consolidation and Improvement Act was enacted, replacing Title I by Chapter 1.

The compensatory educational services provided by Chapter 1 primarily include remedial instruction emphasizing basic skills in reading and mathematics. A typical practice is to remove Chapter 1 students from the classroom for special instruction in these subjects (pullout) in lieu of or in addition to the reading and mathematics instruction received by their non-Chapter 1 classmates. Instruction generally lasts from 20 to 30 minutes, on three to five days a week. In some cases, special instruction is given to Chapter 1 students in the classroom while non-Chapter 1 students are doing other work. In a small percentage of schools, Chapter 1 services are provided through add-on programs, with students receiving remedial instruction before or after school and/or during the summer. Chapter 1 services are provided by teachers and aides who receive special training in strategies for instructing low-achieving students.

Criteria for designating a school as a recipient of Chapter 1 funds vary. Frequently employed bases for selection include the number of students receiving free or reduced-price lunches and/or the number of Aid to Dependent Children enrolled. These criteria demonstrate that the Chapter 1 program is aimed at poor schools rather than low-achieving students. The underlying assumption is that academic achievement is highly related to socioeconomic status or income. Students most likely to receive Chapter 1 services, relative to their number in the total student population, are Hispanics and Blacks in large cities and rural areas and in the South.

Within the set of Chapter 1 schools, criteria for assigning students to compensatory education programs differ across school districts and even across schools within a district and classrooms within a school. Ordinarily teachers and principals identify low-achieving students through standardized achievement tests, class grades and student observation. Yet in some schools, all students are assigned to Chapter 1 programs whether they are low-achieving or not. In other schools, only the lowest achieving students are assigned to Chapter 1 programs.

A consequence of the way Chapter 1 schools are selected and of the way these resources are used within schools is that many low-achieving students are not recipients of Chapter 1 resources while many students who are not low achievers benefit from this program. In 1976-77, only 40 percent of students who were low achievers received compensatory education while over 2,000,000 low-achieving students did not receive any compensatory education (Carter, 1982).

The extensiveness of the Chapter 1 program in terms of cost, teacher training and number of student recipients is staggering. In 1984-85, Chapter 1 programs cost the Federal government over a billion dollars. Over 160,000 teachers, administrators, curriculum specialists and clerical and support staff (in full-time equivalents) were involved. Almost five million students in grades pre-K through 12 (70 percent of whom were in grades 1 through 6) were served by Chapter 1 during that period.

Any program of the magnitude of Chapter 1 is an obvious target for repeated evaluation to determine whether its effectiveness justifies its cost. Chapter 1 and its predecessor, Title I, are no exceptions. One of the most extensive efforts to evaluate Title I was the Sustaining Effects Study (Carter, 1984). This study examined the nature of federally funded compensatory education programs, identified students who received them and tried to determine how effective they were. The national sample included about 120,000 students in over 300 elementary schools on whom data were collected for three successive school years beginning in 1976-77.

Many of the conclusions of the Sustaining Effects Study with respect to the effectiveness of Title I programs are consistent with the findings of other studies evaluating Title I and Chapter 1 (e.g., Wargo et al., 1972; Trismen, Wallter, & Wilder, 1976). Among the most noteworthy results are the following:

1. Compared to low-achieving students who did not receive compensatory education, Title I students made significant gains in mathematics achievement in all the grades, 1 through 6. However, they made significant gains in reading only in grades 1, 2 and 3. Title I programs showed no impact on the reading gains of 4th through 6th-grade students in the sample compared to low-achieving non-Title I students.

2. The largest gains in reading and mathematics occurred in the first grade.

3. Title I services were found to be effective for students who were moderately low achievers but did not improve the relative achievement of students who were seriously disadvantaged.

4. By the time students reached junior high school, regardless of the number of years they had participated in Title I programs, no sustained or delayed effects of the programs were observed.

These results are disappointing, given the investment of resources and personnel that the government has made in Title I and continues to make in Chapter 1. The desired outcome of a program of this magnitude would be steady, significant achievement gains that are sustained throughout a student's school career. While one could challenge the results of these evaluation studies on methodological or conceptual grounds, the consistency of the findings across studies, many of which relied on large samples, justifies a certain amount of credence in their conclusions.

As well as being disappointing, the outcomes of the evaluations of compensatory education programs to date are puzzling and raise a number of questions about Chapter 1. In the first place, why are compensatory education programs more successful in mathematics than in reading, especially if the same amount of compensatory instruction is provided in both subject areas? Why is compensatory education most successful in the first grade and increasingly less effective as students advance through school? Why are compensatory education programs more successful with students who are moderately low achievers than with students who are seriously disadvantaged educationally? Why do the positive effects of participation in compensatory education programs disappear when students move beyond the elementary level?

These questions call for a re-examination of compensatory education in order to determine why it has not been more successful and why these puzzling outcomes occur. The aim of this paper is to identify the mechanisms that relate participation in Chapter 1 programs to student achievement. To accomplish this task, I will ignore questions relating to the appropriateness and equity of current practices designating certain schools as Chapter 1 schools and of identifying particular students as qualifying for Chapter 1 resources. Instead, I will focus on what happens to students in Chapter 1 programs and how their experiences affect their growth in academic achievement.

Within-Class Ability Grouping and Academic Achievement

Chapter 1 programs are basically a form of within-class ability grouping. The rationale for ability grouping is to gear the content, level and pace of instruction to the aptitude of students. Instruction in groups that are homogeneous with respect to aptitude is expected to maximize the likelihood that students will learn.

The evidence in support of ability grouping is not unequivocal. In a recent review of five studies of within-class ability grouping for mathematics, Slavin (1986) concluded that this practice was more conducive to student learning than whole-class instruction. A number of other studies detected no direct effect of ability grouping on mathematics or reading achievement at the elementary level. For example, Sorensen and Hallinan (1986) found no difference in reading gains for fourth through seventh-grade students who were ability grouped compared to those who received whole-class instruction. Similarly they observe[illegible]o direct effect of ability grouping on mathematics achievement for the same age group (Hallinan & Sorensen, 1986).

Research on whether ability grouping differentially affects the achievement of students in high- and low-ability groups also has been inconclusive. Based on his best-evidence synthesis, Slavin (1986) concluded that within-class ability grouping for mathematics benefits low, middle and high achievers, especially when the groups are small. In contrast, a number of studies report that within-class ability grouping disadvantages students assigned to the low group. Reviews of this research are found in Good and Marshall, 1984; and Bossert, Barnett and Filby, 1984. These studies show that, controlling for prior achievement, students in the low-ability group learn less than those in the high group. A differential impact of ability grouping on students by group level could explain the failure of many studies to find a direct effect of ability grouping on student achievement. A positive effect of ability grouping on the high group may be offset by a negative effect on the low group resulting in no change in the mean gain in achievement in ability grouped classes compared to ungrouped classes.

Despite the absence of strong empirical support for within-class ability grouping, educators continue to employ this pedagogical practice, convinced, apparently, that the advantages associated with homogeneous grouping outweigh the disadvantages. The primary advantage, of course, lies in the teacher's ability to tailor instruction to the students' aptitudes. Yet there are several disadvantages. One is the reduced amount of total instructional time students receive, since the teacher must distribute instructional time across the number of ability groups in the classroom. A second disadvantage is the potential for differences in the quantity and/or quality of instruction across groups. Moreover, if teacher expectations differ across groups, students for whom teachers have lower expectations may be disadvantaged. Finally, student self-image and motivation are likely to be affected by ability grouping, if membership in a certain group is associated with a negative label or stigma.

Since Chapter 1 is seen to be a form of ability grouping, the research findings on ability group effects on academic achievement are relevant to an evaluation of Chapter 1. More importantly, the mechanisms that relate ability grouping to achievement are also likely to govern learning in Chapter 1 programs.

Chapter 1 and Student Achievement

In attempting to specify the mechanisms that relate student participation in Chapter 1 programs to academic achievement, it is important to have a clear understanding of the way teachers implement Chapter 1 programs in schools. The most popular strategy is pullout, that is, the removal of Chapter 1 students from the classroom for instruction in a laboratory or resource center by teachers or aides trained in compensatory education. Students are usually instructed in small groups with considerable individualized attention. In some cases the teacher recommends to the specialist the kind of instruction that should be given. In other cases, the specialist initiates instruction and the teacher attempts to reinforce the skills that are learned when the student returns to the classroom. Often the teacher and specialist jointly evaluate the outcome.

A less common, though not rare, practice is mainstreaming in which Chapter 1 students are instructed within their regular classroom. One approach to mainstreaming is for the regular teacher to instruct Chapter 1 students while Chapter 1 personnel provide supplementary assistance. Another form of mainstreaming occurs when a Chapter 1 staff person visits the classroom and instructs Chapter 1 students while the regular teacher works with the other students in the class. With the exception of add-on programs, such as summer school, nearly all Chapter 1 programs reflect some aspect of pullout or mainstreaming, and consequently these two practices will be the primary focus of attention here.

The effects of ability grouping, and in particular, of compensatory education programs, on student achievement are transmitted through two processes: instructional and interactional. It will be argued here that variations in these two processes account for the differential success of Chapter 1 programs across schools, grades and subject areas. These processes will now be outlined.

Chapter 1 and the Instructional Process

Instruction, or the transmission of knowledge to students, has two dimensions: quantity and quality (Hallinan, in press). The quantity of instruction is the total amount of material that is presented to students to learn. It is a function of the amount of time allocated to instruction and of the pace of instruction. The quality of instruction refers to the match between the way a teacher presents material to students and the students' ability and motivation to comprehend it.

Quantity of instruction. A number of studies on instructional time have shown that the greater the quantity of instruction received by students, the more they learn (see Fisher and Berliner, 1985, for illustrations of this body of research). This is true both in terms of the actual number of hours or minutes of instruction and the rate of instruction within a teaching period. Controlling for other factors, instructional time has been shown to predict academic achievement.

Students are actively engaged in learning for some portion of the total amount of time a teacher devotes to instruction. The percentage of time-on-task is influenced by the quality of instruction, by characteristics of the learning environment and by individual characteristics of the students. Again, the more time spent on task, the more a student learns.

The amount of instructional time allocated to a particular subject varies across schools and classrooms and, at times, across groups within a classroom. Similarly, the proportion of instructional time a student is actively engaged in learning depends on characteristics of the learning environment and of individual students. As a result, students in different schools and classrooms and in different ability groups within a classroom have unequal opportunities for learning particular subjects. Schools that require more hours of instruction over a school year provide greater learning opportunities than those that have shorter semesters or days. Similarly, within a school day, teachers who allocate more time to a particular subject, such as reading, provide greater opportunities to learn reading (and likely fewer opportunities to learn other subjects) than teachers who have shorter reading lessons.

Another way quantity of instruction varies is by the pace of instruction. Different teachers present instructional material at different rates. In addition, teachers may vary the pace of instruction across ability groups, instructing high achievers more quickly than low achievers. If the instructional units are the same length, then the students who receive faster paced instruction will cover more material (and likely demonstrate greater gains in achievement) than those who receive slower paced instruction. In a series of studies on the organization of reading instruction, Barr and Dreeben (1983) showed that one of the disadvantages of assignment to low-ability group was that students were exposed to significantly fewer basal words and phonics concepts than those assigned to higher groups.

The effects of quantity of instruction on student achievement has particular relevance for an evaluation of Chapter 1 programs. It must be remembered that the progress of Chapter 1 students is usually compared to that of regular students with the same aptitude. Many Chapter 1 students receive instruction in reading and/or mathematics along with their classmates and, in addition, receive supplementary instruction in that subject in a pullout or mainstream setting. If Chapter 1 students receive more instruction in these subjects than their classmates, then controlling for aptitude, one would expect them to show greater achievement gains. This is a possible explanation of the success of some Chapter 1 programs.

However, the Chapter 1 services do not always provide more instruction in a particular subject than regular students receive, even when Chapter 1 instruction is given over and above regular instruction in a subject. One must consider what part of the regular curriculum Chapter 1 students are missing when they are receiving compensatory education. In many cases, Chapter 1 reading instruction is scheduled while non-Chapter 1 students are engaged in academic or co-curricular work, such as social studies, music or art. To the extent that these activities involve reading, the amount of time regular students spend reading may approximate the time Chapter 1 students are being instructed in reading. Even though the formal instruction Chapter 1 students receive may be more beneficial for them than the work they are missing, the comparative advantage of receiving Chapter 1 services over regular instruction still may be small. The fact that in some schools Chapter 1 programs do not significantly increase the amount of time students actually spend reading, compared to regular students, may account for their failure to produce significant gains in reading.

A comparison of the amount of instruction Chapter 1 and regular students receive in mathematics may explain why Chapter 1 produces greater achievement gains in mathematics than reading. Unlike the case with reading, regular students may not be doing mathematics while their Chapter 1 peers are receiving supplementary mathematics instruction. Mathematics is more curriculum bound than reading and does not easily transfer across curricula. Therefore, Chapter 1 students are likely to receive more mathematics instruction than their classmates, which may account for their progress in this area.

In other Chapter 1 schools, compensatory education replaces regular instruction in reading and mathematics. In these cases, the amount of time Chapter 1 and regular students are exposed to reading and mathematics instruction is about the same, and Chapter 1 students do not receive the advantage of extra instructional time in these subjects. But the pace of instruction also must be taken into account. If Chapter 1 students are given more instructional time but the pace of instruction is slower than regular instruction, the amount of coverage may basically be the same. If the amount of instructional time allocated to Chapter 1 and regular students is the same but the pace of instruction is slower for Chapter 1 students, then the quantity of instruction they receive will be less. Differences in the amount of time and pace of instruction in Chapter 1 programs compared to regular instruction should be taken into account in evaluating the success of Chapter 1.

Quality of instruction. The second dimension of the instructional process is quality of instruction. Quality is determined by the content of instruction and by teacher pedagogy (Hallinan, in press). Content refers to the body of material presented to students, while teacher pedagogy is the way or ways the material is presented. The better the fit between these two aspects of instruction and student characteristics, the higher the quality of instruction.

Although teachers are generally bound by district-wide or state regulations in selecting instructional content, some flexibility is usually possible. This is often apparent in ability grouped classes where teachers limit themselves to the curriculum when instructing low-ability groups but go beyond the curriculum when instructing higher-ability groups. This is partly because high-ability students can cover the required material more quickly than lower-ability pupils. Consequently, low-ability groups receive less content than higher groups.

The pedagogical practices employed by teachers are also likely to differ by group level. A number of studies show that students in high-ability groups receive more interesting and challenging materials, interact more with the teacher and are asked to do more creative work than students in low-ability groups (e.g., Martin & Evertson, 1980; Stern & Shavelson, 1981). Teaching methods employed in low-ability groups include more memorization and rote learning, less teacher-student interaction and the use of less interesting materials. With respect to both content and pedagogical techniques, the quality of instruction in low-ability groups appears to be inferior to that in high-ability groups.

Questions about the quality of instruction arise in examining compensatory education programs. The quality of instruction Chapter 1 students receive varies in content and method just as it does with regular instruction. The quality of instruction in some Chapter 1 programs, like that observed in some low-ability groups, may be inferior to the instruction received by higher-achieving students. Moreover, the content may be limited and the methods of instruction uninteresting and possibly unproductive. Other Chapter 1 programs are likely to be of high quality, partly because staff members have benefited from and implemented the specific training they received in compensatory education. In these programs, the content of the curriculum is likely enhanced and presented in ways that engage student interest and increase motivation to learn. The effectiveness of Chapter 1 programs in producing gains in reading and mathematics achievement is determined by the quality as well as the quantity of instruction Chapter 1 students receive.

Chapter 1 and Student Interaction

The second process that transmits the effects of instructional grouping to student achievement is the interactional process. The interactions of interest here are those that occur between teacher and students and among students within a classroom. Also important, of course, are the interactions between parents or other relevant adults and students but these will not be considered here. Several aspects of teacher-student and peer interaction will be examined. These include teacher expectations, labeling, and peer influences.

Teacher expectations. In predicting student behavior, teachers respond to various cues from students, including both ascribed characteristics, such as race and social class, and achieved characteristics, such as previous school performance. Based on these cues, they tend to form fairly accurate expectations about students' future behavior, and especially their academic performance (Dusek, 1985). The question arises as to whether teachers adapt their behavior toward students based on these expectations and whether students modify their behavior to make it consistent with teacher predictions. This is known as the self-fulfilling prophecy (Rosenthal & Jacobson, 1968).

A number of research studies examining teacher expectancies show that a self-fulfilling prophecy does occur (Dusek, 1985). Many of these studies can be criticized on methodological grounds. Nevertheless, the possibility of an interaction between teacher expectancies and teacher behavior or between teacher expectancies and student behavior is of considerable concern. The fear, of course, is that teachers will limit student attainment through inappropriate expectations. Although teachers tend to make fairly accurate assessments of student potential (Dusek, 1985), their expectations remain fairly stable over time. This could be detrimental to students who demonstrate a sporadic rather than steady learning pattern.

The mechanism through which teacher expectancies affect achievement is student motivation. Teacher expectancies have a direct impact on student self-concept and self-expectations (Eccles & Wigfield, 1985) which are determinants of motivation. A positive self-concept and a high expectation of success increases a student's motivation to succeed, resulting in a greater expenditure of effort to learn and ultimately, higher achievement. A negative self-concept and low expectation of success diminishes motivation and decreases achievement. Teacher expectations, then affect student motivation and achievement through their impact on self-concept and self-expectations.

One way teacher expectations are communicated to students is through their assignment to ability groups, including Chapter 1 programs. Teachers assign students to Chapter 1 services when they judge them to be slow learners in need of remedial work or compensatory education. This assignment, which is highly visible to classmates and to school personnel, is likely to be interpreted by students as a negative evaluation of their academic capabilities and potential. The visibility of Chapter 1 and its clear designation as a service for low achievers should increase the influence of low teacher expectations on the self-concept and self-expectations of Chapter 1 students. A weak self-concept and low self-expectations would then decrease student motivation. Moreover, since student participation in Chapter 1 becomes part of their school record, it may influence the expectancies of other teachers who interact with the student in the future.

Teacher expectancies for Chapter 1 students are also communicated through teacher-student interactions within the program. This occurs in the same way it does in a non-Chapter 1 setting, namely through the instructional process. Unless teachers offset the negative effect of being assigned to Chapter 1 by communicating higher expectations to students during instruction, the program is expected to have an ongoing negative impact on student motivation.

Teachers have a number of ways to counter the negative expectations that are communicated to students through assignment to a Chapter 1 program. One way, for example, is through their evaluation system. Student progress can be judged based on self-mastery, on performance relative to peers or by some absolute standard. An evaluation system that rewards self-improvement makes success seem within the reach of low-achieving students and improves their self-expectations. The experience of success strengthens a student's self-image and increases motivation.

Another way of offsetting the negative teacher expectancies that students perceive through their assignment to Chapter 1 is by creating a cooperative learning environment. A student's academic self-concept is formed by comparison with other students in a reference group (Marsh & Parker, 1984). A cooperative learning climate de-emphasizes comparisons with peers and stresses the importance of each student's contribution toward a common goal. Cooperative learning strengthens student self-esteem by increasing student participation in instructional or group activities (Slavin, 1980). The result should be greater motivation and higher achievement. The failure of Chapter 1 and regular teachers to implement strategies such as these may leave students feeling that teachers expect little progress from them resulting in their expending little effort to learn.

Labeling. A second kind of interaction process is labeling. Usually regarded as a theory of social deviance (Becker, 1973), labeling theory refers to the process of making rules about appropriate attitudes and behavior and assigning the status of outsider or deviant to a person who disregards or breaks those rules. Once a person has been labeled, the deviant is expected to conform to the prescriptions of the role. While labeling theory aims to explain certain kinds of delinquent or nonconformist behavior, it describes a social interaction process that occurs more generally.

Teachers and students label various kinds of student behavior in the classroom. Frequently, labels are related to academic performance. Students are given names, such as "brain" or "dunce", to reflect their position in the academic status hierarchy of the classroom. These titles may be accompanied by esteem or derision and by social pressure on the part of peers to live up to the designated role. Failure to do so may result in group sanction. Less severe names are also used, such as "dumb" or "smart", that carry similar expectations. In attempting to meet these expectations, students' attitudes and behaviors may change and their self-concepts may be altered.

The assignment of students to Chapter 1 programs produces an occasion for classmates to label these peers with some appellation indicating that they are slow learners. It also provides validation of their labels. Labeling theory predicts that, once labeled, Chapter 1 students would be expected to perform poorly. When Chapter 1 students are placed together with regular students for instruction, these expectations should govern their behavior. They may withhold answers that they know or limit participation in group activities lest they be sanctioned by their peers. The expectation of poor performance is likely to govern a student's behavior regardless of the subject area being taught because labels tend to be generalizations of behavior. If a student, for example, is in Chapter 1 for reading, but performs at an average or above average level in mathematics, the latter behavior is likely to be ignored, once the label of Chapter 1 student or low achiever has been applied.

Deviations from the behavior associated with a label are generally noted by a student's classmates. If, for example, Chapter 1 and regular students were together for instruction and a Chapter 1 student provided the correct answer to a difficult question, the student's classmates might attribute the response to luck rather than to proficiency. Repeated correct responses, however, would be regarded as inconsistent with the student's label and would be judged as inappropriate. The other students might sanction the behavior by ridiculing or ignoring the Chapter 1 student. Rather than changing the label, peers would likely exert pressure on the Chapter 1 student to withhold responses or participate less in the lesson.

One could ask whether the tendency to label Chapter 1 students in a derogatory way is more pronounced in a pullout setting than when students are mainstreamed. The answer depends on a number of factors. The more visible Chapter 1 students are, the easier it is to label them. Pullout seems to single out Chapter 1 students more than mainstreaming, suggesting that it may be more likely to encourage labeling. However, with mainstreaming, Chapter 1 students must perform in the presence of their classmates and poor performance may produce labeling. With either practice, the behavior of the teacher is also a factor. A teacher can decrease the impact of negative labels by sanctioning their use, by replacing them with positive labels and by teaching the students to respect and appreciate the talents and skills of each of their classmates.

Peer influences. A third type of interactional process that affects student achievement is peer interaction. A large body of literature demonstrates that peers can have a significant impact on a student's educational achievement, attainment and aspirations. (See Spady, 1973; and Hallinan, 1982; for reviews of this literature.) This impact can be positive and supportive of learning or negative and an obstacle to learning.

The most common explanations of peer influences are normative and comparative reference group theories. A normative reference group is one that sets norms and standards for an individual's behavior. The mechanisms that govern the influence of a normative reference group are compliance and internalization (Peterson, Rollins, & Thomas, 1985). Compliance is conformity that is motivated by the desire to obtain rewards and avoid punishments. Internalization is conformity based on personal commitment and choice. A comparative reference group serves as a basis of comparison for individuals to evaluate their own behavior or that of others.

The assignment of a student to an ability group or to a Chapter 1 program provides a normative reference group for the student. Instructional groups usually define standards of academic behavior, including degree of involvement in the instructional process, attention, motivation, effort and time spent on homework, as well as attitudes toward learning and school. These norms are established by the students and govern their behavior.

A number of studies show that the norms and standards established in low-ability groups are less supportive of learning than those characteristic of higher-ability groups. Students in low-ability groups are more easily distracted, have more disciplinary problems and provide weaker instructional models than higher achievers (Eder, 1981; Gamoran, 1984). Since Chapter 1 students are low achievers, these features of low-ability groups are likely to describe Chapter 1 programs as well.

An ability group, or a Chapter 1 program, may also serve as a comparative reference group for a student. Group members can judge their academic progress relative to that of other members. Students who make good progress academically, relative to their peers, are likely to have better academic self-images and stronger motivation to succeed than those whose progress is below the group average. The "frog-pond" phenomenon (Davis, 1959) operates here with students measuring their progress and ability in comparison to their immediate reference group and defining success or failure relative to the performance of the other group members.

The peer influences that act on Chapter 1 students, then, appear to have both positive and negative effects on their achievement. Low-ability groups, including Chapter 1 programs, provide a normative reference group that may be less conducive to learning than that of higher-ability groups. Yet they also provide a realistic comparative reference group that should foster rather than discourage achievement by strengthening student self-confidence and motivation. Characteristics of reference groups vary, of course, across classrooms and schools as do their impact. The norms and standards governing academic behavior in the high and low-ability groups may be far more similar in some classrooms than in others. Similarly, the heterogeneity of groups with respect to student aptitude varies with some groups being too heterogeneous to provide a reasonable comparative reference group for a student. The particular characteristics of an ability group modify the extent to which group members influence a student's achievement.

Chapter 1 and the Assignment Process

Given the potentially serious consequences for student achievement of assignment to a Chapter 1 program, it is important to examine the process through which students are designated as eligible for Chapter 1 services. As mentioned earlier, teachers generally make this decision and have considerable discretion over the criteria on which they base their judgment. It is possible, therefore, for subjective evaluations and biases to enter into the decision-making process. In a recent study, Hallinan and Sorensen (1986) showed that teachers took gender into account in assigning students to the high-ability mathematics group in a sample of fourth through sixth-grade classes. Reliance on idiosyncratic factors such as a student's ascribed characteristics is likely to lead to a mismatch between some students and a Chapter 1 program. Even when teachers rely on standardized test scores for the assignment, these measures are only weak indicators of a student's aptitude, subject to measurement error, and are likely to be poor predictors of academic performance in many cases.

The inappropriate assignment of a student to a Chapter 1 program or the inappropriate exclusion of a child from such a program may have serious consequences for the student's achievement. To the extent that the instructional and interactional processes are different in Chapter 1 programs than in the regular classroom, students may be advantaged or disadvantaged, depending on characteristics of the particular Chapter 1 program in which they participate. If students' ability levels are higher than that appropriate for Chapter 1, they may receive less instruction than they are capable of, be exposed to a more limited curriculum or be negatively influenced by peers who are less involved in the learning process than their higher-achieving classmates. As a result, students may actually make slower gains in reading or mathematics which may result in their being "correctly" designated as a Chapter 1 student the following year.

Within-class ability group assignments tend to be stable, at least over a school year (Hallinan & Sorensen, 1983). This may be less true for Chapter 1 programs (Carter, 1984). Nevertheless, any tendency to reassign students to a Chapter 1 program because they were previously designated as Chapter 1 students can perpetuate the negative effect of a misassignment.

Finally, participation in some Chapter 1 programs may necessitate a student's missing a part of the school curriculum, such as social studies or music, while they are receiving compensatory education. To the extent that instruction in these subjects is sequential, it may be difficult or impossible for Chapter 1 students to pursue these subjects after they are reclassified as regular students. This results in their having more limited options in course selection as they move through their school career than their regular classmates. This is unfortunate for any student, but is even more so when the assignment of a particular student to a Chapter 1 program was inappropriate in the first place.

Conclusions

This paper provides a conceptual tool with which to evaluate Chapter 1 programs. The questions raised at the beginning of the paper now can be addressed in terms of the processes that relate Chapter 1 programs to student achievement. For example, in asking why Chapter 1 is more successful in the earlier grades, and particularly in first grade, than later, one can compare the instructional and interactional processes that occur in first grade with those in higher grades. It may be that the greater success of Chapter 1 in first grade is because Chapter 1 students receive more instructional time and higher quality instruction in first grade than later. Similarly, interactional processes may be more supportive of learning at the beginning of a student's school career.

The conceptual model can also shed light on the failure of Chapter 1 to have significant long-term effects. The quantity of instruction, in terms of the number of years a student participated in Chapter 1, may be a major determinant of whether the program has long-range benefits. Since many students receive Chapter 1 services for only one year, their participation in compensatory education may not be sufficient to produce long-term benefits. Moreover, since only the lowest achievers are retained in Chapter 1 programs across grades, long-range effects are not likely to appear because achievement is generally small with this population of students, regardless of the kind of instruction they receive. It also may be that only the lowest achievers are retained in Chapter 1 programs for a prolonged period and gain in achievement is least likely with this population of students.

The question of why the lowest achieving students benefit less from Chapter 1 services than their somewhat higher-achieving classmates can also be examined using the conceptual framework presented here. It suggests that very low-achieving students may be more vulnerable to the negative effects of low teacher expectancies and labeling than their higher-achieving peers because their academic self-concepts are generally weaker. The impact of negative interactional processes on the motivation of these students may account for their typically small academic gains.

Research on the effects of ability grouping has been useful in identifying the mechanisms that relate Chapter 1 to student achievement. Since Chapter 1 programs are a form of ability grouping, the same processes that govern the relationship between ability grouping and achievement also influence the effectiveness of Chapter 1 programs. Some of these processes are conducive to learning while others are detrimental to it. In order to adequately evaluate Chapter 1, the nature of these instructional and interactional processes must be clearly understood and the conditions that generate them must be identified.

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CHAPTER 1: THE CHOICES FOR EDUCATORS

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CHAPTER 1: THE CHOICES FOR EDUCATORS

The three papers under review share a broad concern: How can the effectiveness of Federal compensatory education efforts be enhanced? Each paper considers a different, but related, part of the question. Allington and Johnston approach the question from the direction of concerns about coordination among regular classroom reading programs and targeted support programs. Griffin focuses on the perceived need to redirect the use of Chapter 1 staff development funds. And Hallinan contributes a conceptual model for use in evaluating the achievement of Chapter 1 students.

The perspective reflected in this reaction paper is that of an attorney familiar with the evolution of the legal framework for Title I and Chapter 1 and experienced in interdisciplinary studies concerning implementation of Title I and Chapter 1. Consistent with this perspective, the paper first provides an overview of the range of discretion Chapter 1 gives school districts and then comments on the three papers from a legal and policy perspective.

District Discretion Under Chapter 1

The essential purpose of Chapter 1 is "to provide financial assistance to state and local educational agencies to meet the special needs of educationally deprived children" (Section 552 of Chapter 1). Chapter 1 funds must be used for programs and projects "which are designed to meet the special educational needs of educationally deprived children" (Section 555(a) of Chapter 1). To achieve this purpose, Chapter 1 funds may be used for:

- planning for Chaper 1 programs and projects;
- employment of special instructional and counseling and guidance personnel;
- employment and training of teacher aides;
- teacher training;
- bonuses to Chapter 1 teachers for service in Chapter 1 schools;
- the acquisition of equipment and instructional materials;

- construction, where necessary, of school facilities; and

- other expenditures authorized under Title I of ESEA (Section 555(c) of Chapter 1).

Chapter 1, however, provides categorical rather than general aid. School districts are prohibited from using Chapter 1 funds for general aid (34 CFR Section 200.52). To insure that Chapter 1 funds are not used for general aid and do reach the intended beneficiaries, the law and the regulations contain key provisions concerning:

- eligibility and selection of school attendance areas (Section 556(b)(1), (c) and (d) of Chapter 1);

- an annual assignment of educational needs to identify educationally deprived children in eligible attendance areas (Section 556(b)(2) of Chapter 1);

- maintenance of state and local effort for public education (Section 558(a) of Chapter 1);

- the requirement that the level of state and local funds in Chapter 1 schools be comparable to the level of such funds in non-Chapter 1 schools (Section 558(c) of Chapter 1; see Section 558(d) of Chapter 1);

- the prohibition against using Chapter 1 funds to supplant state and local funds and the requirement that Chapter 1 funds supplement the level of state and local funds that would be made available to educate Chapter 1 participants if there were no Chapter 1 funds (Section 558(b) of Chapter 1; see Section 558(d) of Chapter 1);

- the state educational agency's responsibility for ensuring that districts "comply with all statutory and regulatory provisions applicable to Chapter 1." (34 CFR Section 204.13; 51 FR 18412, May 19, 1986)[1]

Subject to the Chapter 1 provisions and to widely varying degrees of state influence, districts have considerable discretion about where and how they use Chapter 1 funds to serve educationally deprived children residing in school attendance areas with concentrations of children from low-income families. Consequently, subject to the above influences, a typical district can decide:

- whether to serve all grade spans or some grade spans or one grade span;

- whether to serve all eligible attendance areas above the district-wide poverty average or to concentrate the program on the highest poverty schools;[2]

- whether to increase the number of schools to be served by using various school selection options, e.g., the "25 percent" poverty option (Section 556(d)(1) of Chapter 1); the "formerly eligible" option (Section 556(d)(4) of Chapter 1); the average daily attendance "substantially equal" option (Section 556(d)(3) of Chapter 1);[3]

- whether to serve all grade levels in Chapter 1 schools or only some grade levels;

- the subject areas in which Chapter 1 will provide services;

- the program designs/delivery models that will be used, e.g., in-class, limited pullout, extended pullout, replacement, add-on;[4]

- how to staff the Chapter 1 projects (e.g., teachers only, teachers and aides, aides only) and whether to staff the Chapter 1 projects with senior personnel or less experienced personnel or both);

- the group size and pupil-teacher ratio to be used in different Chapter 1 projects;

- the amount of Chapter 1 instructional time to be provided in different subject areas and grade levels;

- the level of Chapter 1 resources to allocate to administration, instruction, support services or equipment, supplies and materials, etc., and the level and type of resources to allocate to different Chapter 1 schools and projects;

- the degree of coordination among Chapter 1 and other special needs programs and the degree of coordination between Chapter 1 instruction and the regular instructional program;

- the quantity and quality of instructional materials to be used with Chapter 1 students;

- the type of tests to be used to determine student eligibility and the cutoff scores (up to the 50th percentile) for student eligibility;

- the extent to which teacher judgment interacts with test scores to determine student eligibility;

- whether to spread Chapter 1 resources by serving all eligible students or to concentrate Chapter 1 resources by serving only some of the eligible students;

- whether to use the "formerly eligible" option (Section 556(d)(6) of Chapter 1) or the "transfer" option (Section 556(d)(7) of Chapter 1) to serve otherwise ineligible students;

- whether to "skip" serving eligible students because they are receiving services of the same nature and "scope" from non-Federal sources (Section 556(d) of Chapter 1); and

- whether to limit Chapter 1 instructional personnel to instructional duties or to assign them also to "limited, rotating supervisory duties which are assigned to similarly situated personnel" who are not paid by Chapter 1 (Section 556(d)(10) of Chapter 1).

Given this broad range of district discretion, it is appropriate to repeat that Chapter 1 is "better defined as a funding program than as an educational treatment" (Carter, 1984, p. 11).[5] The nature and effectiveness of the educational treatment vary, in part, according to how the district exercises its discretion to use Chapter 1 funds. Larger forces, such as state, district, and school-level context, interact with district discretion to implement Chapter 1 and shape and mold the educational treatment that ultimately emerges.

Instructional Coordination

Allington and Johnston's paper, "The Coordination Among Regular Classroom Reading Programs and Targeted Support Programs":

- examines different meanings of coordination that emerge from the literature (vertical and horizontal regulatory coordination, instructional coordination and a combination of regulatory and instructional coordination);

- reviews the current status of curricular coordination at the district and school levels;

- analyzes Federal policy assumptions and their consequences;

- outlines some alternative assumptions and practices concerning instructional congruence, opportunity to learn, and the supplement-not-supplant provision; and

- provides a series of recommendations concerning Federal structure and policy and local curricular coordination.

Their principal concerns are (1) the coordination of core curriculum instruction with support program instruction, and (2) the coordination of instruction between support programs. While conceding that they "lack empirical evidence" upon which to base recommendations for curricular coordination, their concerns are driven by the reasonable belief that enhanced coordination will affect the quality of instruction delivered to students.

Three areas of particular interest to this reviewer are (1) the effects of Federal policy; (2) the degree of district and school responsibility for coordination; and (3) the recommendations that flow from their analysis.

The Effects of Federal Policy

Allington and Johnston posit two views about the effects of Federal policy. The first is that "Federal policies are the root of all our problems." According to this view, "Federal fiscal controls" and the "Federal goal of isolating Federal monies from state and local funds" hinder coordination (p. VI-16 citing Ginsburg & Turnbull, 1981; Moore et al., 1983; Cohen, 1982; and Kaestle & Smith, 1982. The second view, which the authors adopt, sees "much of the existing Federal policy structure as unnecessarily duplicative, unwieldly and influential in producing the fragmentation so often noted" (p. VI-17). The authors perceive "shifting social beliefs about the nature of school failure" interacting with the development of Federal policy, the result being the pullout model, the "differential teaching" model, the "small group clinical model," different curricular materials for special populations, and similar manifestations of "professional wisdom" (p. VI-17). Elsewhere, however, the authors note there is "much opinion but little hard evidence to support any conclusion about the effects of policies developed at any level" (p. VI-16).

There are horror stories about the aggregate effects of Federal policy in some districts (Kimbrough & Hill, 1981), but these stories support no generalizations. Kimbrough and Hill's eight districts were nominated by state administrators because they were known to have difficulties implementing multiple categorical programs. The 24 schools studied in these districts were selected for the same reason.

Unfunded Federal mandates (Section 504, the Lau remedies flowing from Title VI of the Civil Rights Act of 1964, Title IX) and underfunded Federal mandates (P.L. 94-142, Title VII) have been difficult for some districts to meet, particularly since the guidelines explaining how to do so consistently with Chapter 1 are not well-known, but districts aware of the relevant principles have solved many of these problems.

The numerous small categorical programs now consolidated by Chapter 2 may have caused some of the complaints of Federal program fragmentation, but what gives rise to this concern regarding Chapter 1? The answer is not immediately apparent.[6] Assuming those concerned about lack of coordination do not object to the congressional policy of focusing Chapter 1 funds on educationally deprived children in poverty schools, one must turn to the "Federal fiscal controls." But which fiscal controls? The maintenance of effort provision does not influence coordination or program design. Nor does the comparability provision. That leaves the prohibition against general aid and the supplement-not-supplant provision as potential suspects. The prohibition against general aid simply means Chapter 1 funds are not to be used for non-Chapter 1 students. Is the supplement-not-supplant provision the villain ruining program coordination?

The basic purpose of the supplement-not-supplant provision is to insure that Chapter 1 funds are used for supplemental programs designed to meet the "special" educational needs of the eligible children. This provision prohibits districts from discriminating against Chapter 1 schools and Chapter 1 participants in the provision of state and local funds. Chapter 1 schools and Chapter 1 participants must be provided the level of state and local funding that would be provided if Chapter 1 did not exist.[7]

Eighteen years ago, Program Guide No. 44 (1968) discussed another aspect of the supplement-not-supplant provision--the need for coordination not only between the core curriculum and Title I, but also between Title I and other special programs. The Program Guide, which warrants extensive quotation, urged districts to insure that:

> consideration has been given to the relationship of the Title I program to the regular school program and to the possibility of modifying that program so as to provide a better base for the addition of supplementary compensatory educational services....

> Probably the most obvious indication of a child's need for special education assistance under Title I is his inability to respond constructively to the regular school program.
>
> In many cases this program can be modified and integrated with the services to be provided under Title I so as to provide the child with a total program adapted to his special needs....
>
> The Title I program, if it is to be truly supplementary, must be designed to extend and reinforce the regular school program. Insofar as possible, the regular school program, the Title I program, and any other special programs should be designed as a total program to meet the needs of the children to be served. This may require revision of the regular school curriculum and will in any event require communication between regular school and Title I staff concerning their respective programs and the ways in which they can be improved to better meet the needs of the educationally deprived children involved in both programs. (Section 4.1 of Program Guide No. 44, 1968)

Thus, Program Guide No. 44 deemed the supplement-not-supplant provision to promote coordination and not to impede it. Nonetheless, coordination problems have often been said to have been influenced by the impact of the supplement-not-supplant provision on program design. Previous inquiries into this matter have revealed that:

- Early Title I regulations did not clearly address the relationship between program design and the supplement-not-supplant provision.[8]
- Though Title I never required use of the pullout design, some states and districts emphasized it as the way to avoid audit problems, particularly general aid violations arising from in-class models where aides served non-Title I children.[9]
- "Federal administration of the requirements guaranteeing the supplementary nature of the program [was] neither clear nor consistent" (National Institute of Education, 1978, p. 173).
- Many districts did not understand the implications of the supplement-not-supplant provision for designing instructional programs providing "extra," rather than substituted, services (Demarest, 1977; Silverstein & Schember, 1977; Vanecko & Ames, 1980).

- Congress, in the legislative history of the Education Amendments of 1978, (1) discussed the lack of clarity and comprehensiveness in the supplanting regulations; (2) stated that Title I did not require a particular type of program design;[10] and (3) directed that new Title I regulations contain "legal nonsupplanting models and include examples explaining how the general principles apply to day-to-day situations" (H.R. Rep. 95-1137, 1978, p. 29).

The 1981 Title I regulations, responding to this congressional concern, described the proper application of the supplement-not-supplant provision to all program design models--in-class, limited pullout, extended pullout, replacement, and add-on. The regulations indicated that state and locally funded instructional time had to be contributed to the extended pullout and replacement models to insure that participants received supplemental rather than substituted services.

When Chapter 1 was enacted in 1981, moreover, it expressly stated that districts did not have to use a pullout design to demonstrate compliance with the supplement-not-supplant provision (Section 558(d) of Chapter 1).[11] If the pullout design causes coordination and fragmentation problems, districts can avoid them by using an in-class design or a replacement model. Nothing in Federal law or policy stands in their way.

The Degree of District and School Responsibility for Coordination

Allington and Johnston find that district and school policies affect the level of coordination between core curriculum instruction and support program instruction, and among different support programs. They also find that most districts neglect both forms of coordination and that many districts have "not structured administrative responsibilities in a manner that facilitates such coordination" (p. VI-10). They suggest three reasons for the "lack of district-wide initiatives" concerning coordination:

- the low priority given to achieving a coordinated effort in the employment of district level administrators;

- misinterpretations of Federal and state regulations or conservative interpretations of such regulations; and

673

- o traditions and professional beliefs of district administrators which may actively oppose coordinated efforts.

And they find that "in most instances neither district-level nor building-level administrators seem to provide adequate leadership" in promoting coordination (p. VI-14). Also of interest is their observation that district administrators' coordination philosophies vary widely. Some favor tight coordination between the core curriculum and support programs. Others believe support program instruction should be distinct. Still others advocate a mixed approach--some similarity with distinct curricular options. It is not surprising that Allington and Johnston conclude "coordinated instructional efforts were far more likely to occur when program administrators believed coordination was appropriate" (p. VI-10).

Recommendations

Allington and Johnston present a series of recommendations concerning Federal policy and local policy. Noticeably absent are recommendations about state policy, which frequently interprets Federal requirements, adds others, and influences implementation of both at the local level.

They suggest Federal policy should (1) "provide a coordinated and coherent focus for lower-level policy makers"; (2) "focus more on 'service quality' and less on separating funds by categorical programs"; and (3) "emphasize the similarity of instructional needs amongst the children served by the several current categorical programs" (p. VI-30). To accomplish these ends, they propose either "merging the agencies in charge of compensatory education, education of the handicapped, and vocational education, to name a few" or having the Secretary of Education "emphasize coordination amongst the several agencies and a better articulation of Federal roles in achieving effective schools for the various 'at risk' populations" (pp. 39-49).

Compensatory education, education of the handicapped, and vocational education are all authorized under separate laws. Absent a block grant proposal acceptable to the Congress, it is extremely unlikely that these authorities will be merged in a single law. Further, the Department of Education Organization Act (DEOA; Public Law 96-88) specifies the structure of the Department of Education. The Act requires that the principal officers of the Department include Assistant Secretaries for (1) Elementary and Secondary Education, (2) Vocational Education, and (3) Special Education and Rehabilitative Services (Section 202(b)(1)(A),(C) and (D) of the DEOA). The

Secretary of Education lacks authority to merge these three offices into one, as has been recommended. It is highly unlikely that the Congress will amend the Act to effect such a merger.

The Secretary of Education could certainly "emphasize coordination" among the several relevant offices that comprise the Department.[12] Similarly, nothing precludes the Secretary from developing a "better articulation of Federal roles in achieving effective schools." The Secretary's initiative could encourage coordination and "service quality" improvements that were not inconsistent with the legal mandates governing the various Federal programs. The Secretary, however, lacks authority to waive a regulation when it would mean ignoring a statutory mandate.

The recommendations for local policy are useful and may be of assistance to districts which are motivated to attempt enhanced coordination.

One approach to promoting consideration of coordination in districts which don't focus on the issue is to mandate it by statute. The Title I statute had a coordination provision with a different focus:

> COORDINATION WITH OTHER PROGRAMS.--(1) A local educational agency may receive funds under this title only if it demonstrates that, in the development of its application, it has taken into consideration benefits and services which are or may be available through other public and private agencies, organizations, or individuals. The local educational agency shall also demonstrate that in order to avoid duplication of effort and to ensure that all programs and projects complement each other, it has considered suggestions and offers of assistance made by other agencies which may aid in carrying out or making more effective the program or project for which the application is made.
>
> (2) A local educational agency may use funds received under this title for health, social, or nutrition services for participating children under this title only if such agency has requested from the State educational agency assistance in locating and utilizing other Federal and State programs to provide such services. (Section 124 (f) of Title I)

This provision could be redrafted so that it reads as follows:

> COORDINATION WITH OTHER PROGRAMS. A local educational agency may receive funds under this chapter only if it

> demonstrates that, in the development of its application, it has taken into consideration (1) the extent to which the use of funds provided under this chapter has been or will be coordinated with the use of funds from other Federal, state, and local programs available for the instruction of special needs students; and (2) the extent to which it has chosen to coordinate its core curriculum instruction with supplemental instruction supported under this chapter. The local educational agency shall also demonstrate that in order to avoid duplication of effort and to ensure that all programs and projects complement each other, it has considered suggestions made by administrators and teachers implementing other special needs programs which may aid in coordinating, carrying out, or making more effective the program or project for which the application is made.

The above language does not run afoul of the prohibition against Federal control of education (Section 432 of GEPA, Section 103(b) of DEOA). It merely requires districts to demonstrate in their applications that they have considered the extent to which there will be coordination. Such an amendment, however, might arguably be construed as contrary to one of the purposes of Chapter 1: to "eliminate burdensome, unnecessary, and unproductive paperwork and free the schools of unnecessary Federal supervision, direction and control" (Section 552 of Chapter 1). States and districts operating with streamlined applications (or even assurances in lieu of a narrative application) might howl in protest at another process requirement that increases "administrative burden" and "paperwork." Districts which give coordination low priority could always produce innocuous language for the application and continue business as usual. Districts which are genuinely concerned about coordination will continue to attempt to address the issue whether or not such an amendment ever gets enacted.

The limits of legal amendments suggest other efforts might be more fruitful. Much of the coordination research seems to have focused on problems caused when districts provide little or no coordination. This pathological perspective emphasizes coordination problems rather than successful efforts at coordination. In fact, coordination can occur and is occurring. Perhaps too many districts do not know how to do it or don't think of the issue. A study of schools and districts specially selected because of their outstanding and varied modes of program coordination, however, might be a useful means of pointing the way.

Staff Development

Griffin's paper, "Chapter 1 and the Regular School: Staff Development," identifies two conceptual approaches to staff development. The first is the traditional "content driven orientation." The second, which he characterizes as an emerging alternative, is a "context orientation" which involves manipulation of school context variables so that work is positively affected. He argues that, since the effective schools research suggests context has a powerful influence on outcomes, then context-oriented staff development is a reasonable approach. He asserts further that context-oriented staff development is reasonable for the Chapter 1 setting because:

- Chapter 1 programs are not well-developed educational or instructional interventions;
- Chapter 1 students tend to be located disproportionately across school settings;
- school-level leadership would be enhanced if focused on context issues rather than the requirements of different school-based programs;
- the best instructional strategies for Chapter 1 students will be equally effective in conventional classrooms;
- schooling for any student is composed of a number of interacting variables; and
- pullouts may not be the best way to promote the goals of Chapter 1.

Since context oriented staff development is conceived of as a school-wide effort rather than a classroom activity, Griffin argues that some changes are needed to get to the promised land. These include:

- revision of staff development program guidelines related to Chapter 1 programs;
- using rules and regulations to cause teachers and administrators to work together so that context influences can be brought to bear upon opportunities for Chapter 1 students;
- having Chapter 1 staff development be school-wide instead of "targeted to special educational personnel groups"; and

- o using Chapter 1 staff development funds to integrate an understanding of the special needs of Chapter 1 students throughout the school by extending Chapter 1 staff development opportunities to all professionals.

These proposals must be assessed in light of the legal framework. We begin with the 1981 Title I regulations, which contained a section concerning the use of Title I funds for training eligible persons and a section concerning training education aides and volunteers. The first section stated:

> Section 200.75 Use of Title I funds for training eligible persons.
>
> (a) Eligible persons. An agency may use Title I funds to train —
>
> (1) Staff members paid with Title I funds, advisory council members and volunteers who will perform services in a Title I project;
>
> (2) Regular classroom teachers paid with non-Federal funds if those persons provide instructional services to participanting children or children who will participate in the next school year; and
>
> (3) Principals of schools in which children who participate in a Title I project or who will participate in the next school year are enrolled.
>
> (b) Scope of the training. The training referred to in paragraph (a) of this section must be —
>
> (1) Directly related to the Title I services to be provided during the school year in which the training is being provided or in the next school year;
>
> (2) Directly related to the functions that the persons receiving the training provide for the children participating in the Title I project; and
>
> (3) Necessary to meet the needs of the participating children. (34 CFR Section 200.75, 46 FR 5144, January 19, 1981)

The second section stated:

> Section 200.60. Training education aides and volunteers.
>
> An Agency operating a Title I project that includes education aides or volunteers shall, under a well-

developed plan, provide those education aides and volunteers with training that --

(a) Is directly related to a Title I service;

(b) Is provided as needed to ensure that the education aides and volunteers are adequately trained;

(c) Includes the participation of the professional staff who are, or will be, assisted by the education aides and volunteers; and

(d) Is coordinated with other training programs being provided by the agency. (34 CFR Section 200.60, 46 FR 5143, January 19, 1981)

Other than authorizing the use of Chapter 1 funds for the training of teachers and aides, the Chapter 1 law and regulations do not directly address staff development. Consequently, we must, in this case, consider the interpretations advanced by the Department of Education in the 1981 Title I regulations. Assuming these interpretations have bearing on the use of Chapter 1 funds for staff development, it appears that:

- Chapter 1 funds may be used for staff development for staff members paid with Chapter 1 funds, principals of schools which now have Chapter 1 students or will have them next school year, and regular classroom teachers and staff specialists who serve Chapter 1 participants or students who will participate in the next school year; and
- the scope of the training must be necessary to meet the needs of Chapter 1 participants, directly related to the functions that those trained provide for Chapter 1 participants, and directly related to the Chapter 1 services to provide this year or next year.

Under this interpretation, Chapter 1 staff development funds cannot be used for regular classroom teachers or staff specialists who do not serve Chapter 1 students this school year and will not serve them next school year. The same applies to principals. Also, the scope of the training apparently does not include matters not "directly related" to the services to be provided and the functions those trained provide for Chapter 1 participants.[13] Since the Chapter 1 law and regulations are silent on these issues, it is always possible that more flexible or more restrictive interpretations might be advanced. The prohibition against general aid, however, would bar the use of Chapter 1 funds from being used for staff development for the entire school staff, except in school-wide projects or in Chapter 1 schools where the number of Chapter 1 participants was so high that every regular classroom teacher provided instructional services to Chapter 1 students.

Student Achievement

Hallinan's paper, "Chapter 1 and Student Achievement: A Conceptual Model," seeks "to identify the mechanisms that relate participation in Chapter 1 programs to student achievement" (p. VI-62). She ignores questions relating to school and student selection criteria, focusing instead on "what happens to students in Chapter 1 programs and how their experiences affect their growth in academic programs" (p. VI-62).

In discussing Chapter 1 programs, she initially appears to consider only pullout, in-class, and add-on projects, but later inserts a reference to replacement projects. Such projects require a contribution of state and local instructional time to avoid supplanting and, where there is a total replacement project, frequently result in dramatically reduced class size and lower pupil ratios. Hallinan does not mention these factors in her brief discussion of replacement projects.

Hallinan notes that compensatory education programs involve grouping of students by ability and discusses the benefit and detriments of ability grouping, as well as methods teachers may use to counterbalance the detriments. She does not suggest that ability grouping be avoided or that compensatory approaches be abandoned. Rather, she suggests that analysis of the quantity and quality of compensatory instruction, and the interactions between teachers and students and among students in compensatory education settings, may provide insights into the reasons for particular programs' success or failure.

She identifies several factors determining instructional quantity and quality and several aspects of the interactional process. These considerations and factors may be useful for those designing future evaluations of the educational outcomes of the Chapter 1 instructional process. It is important to remember, however, that there is no national Chapter 1 instructional program that is uniform across districts and within districts. Chapter 1 programs vary from state to state, from district to district within states, and often from school to school within districts. Districts have broad discretion in designing the instructional component of Chapter 1 programs.

Conclusion

The three papers to which my comments have been addressed illustrate an important point about Federal compensatory education--only some of the many important policy issues are appropriate for resolution by statute or regulation. Further, problems of program quality and effectiveness are not the inevitable result of Federal legal provisions. The legal framework grants educators broad discretion in designing pedagogical approaches. Chapter 1 program implementers must serve educationally disadvantaged children in poverty schools, must plan and evaluate their program, and may not discriminate against Chapter 1 children or schools in allocating other resources. The law says little else. Whether the program succeeds depends on educators.

Endnotes

1. Other legal provisions include those concerning records and information for audits and evaluations (Section 558(d) of Chapter 1); evaluation (Sectiona 556(b)(4) and 558 (e) of Chapter 1), the "size, scope, and quality" of Chapter 1 projects (Section 556(b)(3) of Chapter 1); the requirement that programs and projects be designed and implemented in consultation with parents and teachers (Id., and Section 556(e) of Chapter 1; see 34 CFR Section 200.53, 51 FR 18410, May 19, 1986); and participation of children enrolled in private schools (Section 558 of Chapter 1).

2. Districts with a total enrollment of less than 1000 children may serve all school attendance areas (Section 556(c) of Chapter 1). Similarly, districts whose school attendance areas have a "uniformly high concentration" of children from low-income families can serve all school attendance areas (Section 556(b)(1)(B) of Chapter 1; see Comment and Response on Section 200.50, 51 FR 18415, May 19, 1986).

3. With approval from the state educational agency a district may (1) "skip" an eligible attendance area if it is receiving services of the "same nature and scope" from non-Federal funds (Section 556(d)(5) of Chapter 1); (2) serve an otherwise ineligible school attendance area with "substantially higher numbers or percentages of educationally deprived children" instead of a school attendance area with higher concentrations of children from low-income families if this does not provide services to more school attendance areas than could otherwise be served and does not "substantially impair" the delivery of compensatory education services to Chapter 1 students in other schools (Section 556(d)(2) of Chapter 1); and (3) provide a school-wide project "designed to upgrade the entire educational program in the school" if at least 75% of the children are from low-income families and certain planning and fiscal requirements are met (Section 556(d)(9) of Chapter 1).

4. Chapter 1 expressly states that a district is not required "to provide services...outside the regular classroom or school program" in order to demonstrate compliance with the supplement-not-supplant provision (Section 558(b) of Chapter 1).

5. The Department of Education is not in the business of prescribing educational treatment for Chapter 1 students. Section 432 of the General Education Provisions Act, which

prohibits Federal control of education, states that "no provision of any applicable program shall be construed to authorize any department, agency, office or employee of the United States to exercise any direct supervision or control over the curriculum, program of instruction, administration or personnel of any education institution, school or school system..." Section 103(b) of the Department of Education Organization Act contains a similar provision.

Chapter 3 of ECIA also limits the Secretary's authority to issue regulations concerning the "details of planning, developing, implementing, and evaluating programs and projects" (Section 591 of Chapter 3). As the comments to the Chapter 1 regulations state: "Consistent with the intent of Chapter 1, the Secretary believes that an LEA should have maximum flexibility in designing its Chapter 1 projects" (51 FR 19417, May 19, 1986).

6. Allington and Johnston suggest the absence of regulatory language on coordination may be a cause; they state that curriculum coordination has "never appeared as part of the Federal regulatory language for any of the various intervention programs that emerged as a result of Federal laws or policies" (p. VI-7). The 1981 Title I regulations, however, included the following: "The Secretary strongly encourages the [local educational] agency to coordinate Title I instructional services with services provided under other programs, including the regular instructional program provided by the LEA." (34 CFR Section 200.40(b), 46 FR 5141, January 19, 1981) This suggests we must look elsewhere for the cause of coordination problems.

7. The 1981 Title I regulations permitted instructional time rather than dollars to be used as a guide to assessing whether Title I participants in instructional settings were receiving the level of state and local resources they would have received if Title I did not exist. The Chapter 1 Non-Regulatory Guidance document continues this practice.

8. Program Guide No. 44, which is no longer in effect, was not a regulation.

9. When the District Practices Study asked a large nationally representative sample of districts in school year 1981-82 why they used a pullout design, the following reasons were considered by districts to be "very important" or "somewhat important":

Reasons for use of pullout design	Percent of districts*
Educationally superior for part or all of our program	81
Easier to demonstrate compliance with funds allocation requirements	60
State Title I office advice	46
Not worth the disruption of changing	33
Other	18
	(1149)

(Advanced Technology, 1983, pp. 8-38)

*Percentages do not total 100 percent since more than one response to the question was permitted.

10. The legislative history emphasizes this point: "Title I should not be construed to require any particular instructional strategy. The U.S. Office of Education (OE) should develop regulations which inform program administrators how to design 'inclass' as well as 'pullout' programs" (H.R. Rep. 95-1137, 1978, pp. 26-27). Congress merely reaffirmed its consistent policy in this regard in 1978. The legislative history of the original 1965 legislation made the same point: "such matters are left to the discretion and judgment of the local educational agencies" (S. Rep. 89-146, reprinted in U.S. Code and Cong. Admin. News, 1965, p. 1,454). Congress echoed this sentiment in the legislative history of the Education Amendments of 1970 (S. Rep. 91-634, reprinted in U.S. Code and Cong. Admin. News, 1970, p. 2,772).

11. The Chapter 1 Nonregulatory Guidance document includes the program design models that were in the 1981 Title I regulations and describes them as "Examples of Chapter 1 Instructional Services That Meet the Supplement Not Supplant Requirement."

12. The Department of Education Organization Act contains references to coordination. In Section 101(7) of the DEOA, the Congress found "there is a need for improvement in the management and coordination of Federal education programs to support more effectively state, local and private institutions, students and parents in carrying out their educational responsibilities." One of the purposes of the Act was "to improve the coordination of Federal

education programs" (Section 102(5) of the DEOA). The Act also provides for a Federal Interagency Committee on Education which "shall study and make recommendations for assuring effective coordination of Federal programs, policies, and administrative practices affecting education ..." (Section 214(b) of the DEOA).

13. These restrictions presumably would not apply to schoolwide projects which met all applicable requirements (Section 556(d)(9) of Chapter 1).

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THE RELATIONSHIP BETWEEN COMPENSATORY EDUCATION AND REGULAR EDUCATION: REACTIONS

by

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THE RELATIONSHIP BETWEEN COMPENSATORY EDUCATION AND REGULAR EDUCATION: REACTIONS

These comments focus on a series of topics pertaining to the relationship between compensatory education and regular education in response to papers prepared by Allington and Johnston, Hallinan, Griffin, and others who have analyzed aspects of these issues. These comments are based primarily on a series of research studies concerning the implementation of educational reforms affecting low-income, minority, handicapped, and female children (children at risk) that have been carried out by Designs for Change. The topics of these research studies include the implementation of strategies for on-site assistance to schools attempting to implement basic reforms, the nature and costs of staff development activities in urban school systems, the nature of student classification systems in urban school systems, and the nature and impact of the education reform strategies of parent and citizen advocacy groups (Moore, Schepers, Holmes, & Blair, 1977; Moore & Hyde, 1980; Moore, Hyde, Blair & Weitzman, 1981; Moore, Soltman, Steinberg, Manar, & Fogel, 1983). The basic method of each study was focused qualitative research, with the study of multiple sites employed to clarify similarities and differences.

These studies were guided by a model, for understanding the educational system, called the "service quality model," which was itself refined through this series of studies. This model has been described in detail elsewhere (Moore et al., 1983). Below, some key features of the service quality model are described briefly, since the model is useful in thinking about the relationship of compensatory education and regular education.

The Service Quality Model

Recent research concerning the characteristics of school environments indicates that there are substantial differences in the nature of services provided to children day-to-day, even in schools that serve similar student populations and have similar levels of monetary and human resources available. Such services to children are the tangible link between school inputs, on the one hand, and the impact of schooling on student growth and progress on the other. Thus, we conclude that a central issue for those concerned about equal to educational opportunity for children at risk is to identify the nature of services to children that bring about desired outcomes for student growth and progress and to identify those practices at the classroom level, the school level and other levels of the educational system that facilitate the provision of such quality services.

Drawing on the legal and ethical traditions that form the basis for the concept of equal educational opportunity, as well as a range of research about the functioning and impact of education reform, we have identified three standards that are useful for judging the quality of services to children:

- Increasing children's opportunities to receive services shown through research to enhance student progress toward high priority educational objectives.

- Increasing children's opportunities to receive services that reflect a coherent effort to respond to special needs that limit progress toward high priority educational objectives, even if there is no compelling research indicating that a particular approach to meeting special needs has clearly proven effective in enhancing student progress.

- Increasing children's opportunities for access to school itself and access to specific school services and programs.

The quality of services to children is determined most directly by formal and informal practices at the school and classroom levels. Recent research about the importance of the school as a social system, including the effective schools research, draws particular attention to school-wide norms, organizational routines, and the like that shape service quality. However, it is also clear that practices at other levels of the educational system, including school district, state, and Federal levels, have a major impact on service quality, so the school cannot simply be analyzed in isolation. Thus, we conclude that it is important to analyze practices at multiple levels of the educational system that affect service quality. With respect to compensatory education, for example, it is important to analyze compensatory education services and practices in light of the functioning of the entire school, including the regular program, and to analyze those practices at higher levels of the educational system that affect the nature and quality of compensatory education services provided to children in schools and classrooms.

A final feature of the service quality model incorporates a strategy first proposed by Allison (1971) and first applied to education by Elmore (1978) of drawing on alternative social science theories in turn as "conceptual lenses" for understanding the nature of educational practices at various levels of the system and the services that result from these practices. The service quality model draws on six such perspectives:

systems management perspective (Elmore, 1978), conflict and bargaining perspective, (Wirt & Kirst, 1972; Spring, 1978; Williams, 1978; Edelman, 1964; Scheingold, 1974), economic incentives perspective, (Pincus, 1984; James, Kelly, & Garms, 1970; Wildavsky, 1979; Moore & Hyde, 1981), organizational patterns perspective (Lortie, 1975; Becker, 1953; Lieberman & Miller, 1978; Sarason, 1971), subculture perspective (Berger & Luckmann, 1967; Mehan & Wood, 1975; Sherif & Sherif, 1956; Wolcott, 1977), and professional participation and development perspective (Elmore, 1978; Schmuck, 1977; Hall & Loucks, 1978). We find that viewing a particular issue in light of hypotheses drawn from these six perspectives yields extremely rich and useful insights. We also find that many misleading interpretations of an issue result from taking one of these perspectives to the extreme, while ignoring others (for example, concluding that quality services will be provided to children if persons with formal authority simply issue and enforce detailed directives for subordinates or concluding that quality services will be provided to children if teachers are given near-total autonomy to do what they think is best).

A Look at Some Specific Issues

In the balance of this comment, a series of specific issues are analyzed by drawing on the service quality model and on the specific research cited above. The issues discussed first are specific ones raised by the three papers to which I have been asked to react. Those discussed later are general ones that are important to overall deliberations about compensatory education because they frame our way of thinking about its relationship to regular education and about how it might be substantially improved.

Program Coordination

The comments by Allington and Johnston concerning the coordination of regular classroom reading programs with compensatory programs is in many respects consistent with the analytical strategy suggested by the service quality model. The authors carefully review research about the specific characteristics of services to children and about the types of educational practices that lead to service quality problems. For example, the authors conclude that teachers working with the same children characteristically fail to communicate even the most basic information to each other about such topics as what texts and methods they are using and how students are progressing. Because the authors emphasize data about lack of coordination between regular and special program teachers, the reader might conclude that this lack of communication results from some particular feature of Federal programs. However, our own research about classification and program coordination calls this supposition into doubt. We found exactly the same lack of communication existing between regular program teachers who were responsible for the same children as we found between regular program teachers and categorical program teachers responsible for the same children (Moore & Hyde, 1981). And we found the most persuasive explanation of these observations in studies about the nature of teaching as a profession and the social organization of schools, which were carried out by researchers like Becker (1953), Sarason (1971), and Lortie (1975), who collected their data before categorical programs came into prominence. Lieberman and Miller (1978) capture this important teacher norm that undermines coordination when they write:

> Being private means that teachers do not share experiences about their teaching, their classes, their students or their perceptions of their roles with anyone inside the school building . . . 'You, do your thing in your class and you leave and don't talk to anyone about it.'

This makes the problem of program coordination very difficult to solve, since it runs up against a basic norm binding together the school as a social organization, and is not merely an aberration recently introduced by the coming of Federal categorical programs.

I offer a similar interpretation of another observation made by Allington and Johnston who, along with many others, note the preference of Chapter 1 personnel for pullout programs, and the persistent tendency of local staff to "misinterpret" Federal requirements as requiring that students are to be pulled out. Here again, if those who have written about the basic norms of the schools are to be believed, we are running up against deeply ingrained customary practice. Teachers have autonomy in their classroom, and in most schools they view it as very threatening to co-teach with another teacher in the same room, which would be the practical impact of Chapter 1 instruction in the regular classroom (Lieberman & Miller, 1978).

Another strength of Allington and Johnston's analysis, from the perspective of the service quality model, is that they step back from the school and classroom level and analyze the impact of coordination (or typically lack of coordination) at higher levels of the system. They summarize substantial evidence about the failure of district level staff to coordinate regular and categorical programs. Here again, our data about district-level program coordination and district-level staff development coordination support their observations. However, as at the school level, our research indicates that the lack of coordination that exists, for example, between the Chapter 1 coordinator and the reading coordinator also exists between the reading coordinator and the language arts coordinator, who are both locally funded. Here again, we seem to be dealing with a basic tendency of bureaucratic organizations like school districts to divide responsibilities up into parts and parcel them out to various organizational units. These units will inevitably be given or will assume considerable power over their area of responsibility, fragmenting the organization into numerous parts that resist top-down control (Allison, 1971; Elmore, 1978; Cyert & March, 1963).

Moving to the Federal level, the authors credit much responsibility for program fragmentation at school district and school levels to the basically categorical nature of Federal reform efforts. We certainly agree that Federal reform initiatives have done nothing to alleviate service fragmentation and have in many instances intensified it. However, consistent with the analysis above, we disagree that observed problems of fragmentation at school and school district levels are fundamentally the result of Federal and state intervention. Rather, our data indicate that Federal and state programs took their place in an already fragmented service planning and delivery system. Had Federal programs been initially conceived in broader terms, they would have encountered enormous pressures toward fragmentation and compartmentalization as they moved through the implementation process (Allison, 1971).

Our data suggest one promising starting point for achieving greater coordination at both school district and school levels: encouraging the individual who has the formal authority to press for coordination to exercise that authority. It is customary for principals and for the person with the appropriate supervisory authority at the school district level (usually a deputy or associate superintendent to whom both staff and line administrators ultimately report) to exercise very little control over their subordinates. However, these individuals are perceived by their subordinates as possessing legitimate authority, so that if they choose to exercise it vigorously and skillfully, they can elicit a constructive response (Becker, 1953; Lortie, 1975). (For example, if a principal insists that all teachers working with the same children must meet at least once a week and follows through on this directive, norms about coordination can be changed over time.) Another staff member, acting with clear support from the responsible administrator, can also take such initiative and make it work. Further, while it is possible for other staff to initiate such coordination without the clear backing of the key administrator, such coordination efforts are very fragile and can disappear overnight with a shift of the personnel involved.

Chapter 1 Programs As Within-Class Ability Groups

Hallinan presents a model for explaining student achievement in Chapter 1 programs and discusses points of agreement between this model, derived from research about ability grouping, and research results concerning the achievement of Chapter 1 students. As with the paper just discussed, the author presents a detailed analysis of important aspects of the services that a Chapter 1 student is likely to experience, as well as an analysis of teacher practices that create problems in the delivery of services and that may limit student achievement in Chapter 1.

Hallinan's analysis of Chapter 1 as a form of ability grouping suggested for me the need to analyze the position of the Chapter 1 student within the system of grouping and tracking that exists within the regular school program, apart from Chapter 1 participation. A recent study of tracking by Oakes (1985), as well as other research on tracking and ability grouping, underscores the pervasiveness of various forms of tracking which seem to be intensifying in response to the excellence movement, despite evidence that tracking is detrimental to low-achieving students. When Chapter 1 is discussed, a contrast is frequently made between pulling students out for Chapter 1 programs and serving them in the "mainstream." However, students with low reading achievement who are candidates for Chapter 1 are likely to already be in a low track or ability group, with all the attendant features of such low tracks (e.g., slow pacing, an emphasis on rote learning). In short, the child's basic classroom or ability group placement may already be outside the "mainstream" and understanding more about the child's position in the regular program's track system could refine the mainstream versus pullout dichotomy (Shuy, 1978).

With respect to the basic concerns suggested by the service quality model, I would suggest several questions for Hallinan that go beyond her effort to analyze why things are the way they are:

- What alternative approaches to the provision of Chapter 1 services would be more potent than the current program?
- What institutional norms, routines, and other organizational regularities would be challenged by

such alternative approaches and how could such difficulties be overcome?

Staff Development

Griffin describes a conception of staff development that he argues is appropriate for improving the quality of education and the achievement of students in Chapter 1 schools, which he describes as follows:

> Instead of concentrating upon the development and implementation of a content-driven intervention to be introduced into teachers' and others' professional lives, attention is given to manipulating the environment in which teachers do their work such that work is positively affected . . . . Naturally, enacting such a strategy will eventually call for the introduction of "new" content, but the introduction is in response to, rather than the cause of, the structural manipulation of school context variables.

From the standpoint of the service quality model, this point of view grows from the "teacher participation and development perspective," whose core belief has been stated as follows:

> Organizations should function to satisfy the basic needs of their members--for autonomy and control over their work, for participation in decisions affecting them, and for commitment to the purpose of the organization. (Elmore, 1978)

For those who are primarily concerned about improving the quality of educational services for children, the appropriateness of this approach rests on the claim that increased teacher participation and autonomy will lead to improved educational quality. While we agree that teacher participation and commitment are absolutely essential to improving educational services, we also find basic shortcomings in the formulation of this idea advanced by Griffin. Like other mortals, teachers define problems and problem solutions in light of their existing organizational routines, their existing frames of reference, and their self interest. For the benefit of students, autonomy must be exercised within some clear limits. For example, we have just discussed the deep-seated teacher resistance to coordinating instructional approaches for individual students who receive reading instruction in Chapter 1 and in the regular program. We believe that it should be a "given" that such coordination should begin to take place; exactly how this occurs could entail considerable flexibility and teacher planning and participation. To cite another example, inappropriate referrals of children for special education assessment have been identified by researchers as a leading cause of the misclassification of Black students as mentally retarded (Panel on Selection and Placement of Students in Programs for the Mentally Retarded, 1982). Mechanisms for the intervention of an expert teacher to help solve a child's problems in the regular classroom before referral leads to special education evaluation should, we believe, be standard practice in every school. Whether such mechanisms are established should not depend on whether teachers decide they need such a reform. Again, given the decision to implement such a change, one can imagine considerable teacher decision-making about how it is done.

What we are suggesting is not a comprehensive and self-defeating effort to prescribe and monitor every aspect of teacher behavior, that Wise (1979) called "hyperrationalization." Rather, the potential for improving service quality lies in identifying a limited set of critical practices most important in increasing service quality and conducting a concerted campaign for their implementation, while allowing and encouraging wide areas of teacher autonomy and flexibility. Thus, we conclude that a somewhat different balance between a systems management approach and a teacher participation and development approach stands a much better chance of improving service quality.

Griffin fails to cite convincing evidence that the approach he advocates is applicable to schools serving large numbers of low-income children and operating under the constraints characteristic, for example, of large urban school districts. A basic piece of empirical evidence supporting the proposed model is the experience of an 18-school consortium in Southern California, which implemented a process similar to the one that Griffin describes under the leadership of John Goodlad (Bentzen, 1974). Participation both by school districts and by schools was largely voluntary. Only two schools had minority populations in excess of 20 percent. The consortium dissolved itself when the project's university researchers terminated their involvement. Our own research on a similar initiative by the same organization (/I/D/E/A/) indicated wide variations in implementation of the basic reform strategy advocated by Goodlad, primarily dependent on the initiative of the school principal (Moore et al., 1977).

Another feature of Griffin's analysis which is contrary to our own data about staff development in big city school districts is the lack of any emphasis on the ways in which school district action can either facilitate or hinder school level initiative to improve practice. For example, we found in studying staff improvement activities in three large school districts that district scheduling that allowed time for school-initiated staff development strongly encouraged such staff development; decentralization of budgeting and planning decisions to the school level strongly encouraged school-initiated staff development; and the existence of an extensive set of staff development experiences devised independently by central office staff strongly discouraged school-initiated staff development (Moore & Hyde, 1981).

Effective Schools Research and Compensatory Education

The emergence of the effective schools reform movement and related research suggests a highly promising approach to improving service quality for the children who are presently the intended beneficiaries of Chapter 1 (Purkey & Smith, 1983). Potentially, the types of effective school and classroom practices identified through the research can provide a clear link between the resource inputs of schools and appropriate results for low-achieving children. Further unlike compensatory education, there is evidence that effective schools boost the achievement of the lowest-achieving children (see, for example, Advocates for Children of New York, 1986). Of course, there are many cautions to be observed in interpreting the effective schools results, which have been widely noted recently, including the danger of locking onto simplistic cookbook formulations of effective schools correlates and the various problems in reliably identifying high-achieving schools that sustain their results over a period of years and substantially boost the achievement of all children (Purkey & Smith, 1983; Rowan, Bossert, & Dwyer, 1983). However, research responsive to these concerns seems to appear weekly, such as a recently published careful study of four effective middle schools in New York City that appears to answer key methodological concerns (Advocates for Children of New York, 1986).

However, there are major problems in applying the findings of the effective schools research on a wide scale, beyond the question of identifying a smattering of schools that are truly effective. It appears that the effective schools movement is frequently proceeding according to a conventional implementation strategy in which a few highly committed principals and school staffs struggle hard to create effective schools, some additional schools make a moderate attempt to become effective, and a large number adopt the rhetoric of effective schools with none of their reality (Moore et al., 1977). For example, the Chicago Public Schools initiated an Effective Schools Program several years ago and gave it substantial funding; however, systematic school-level observation by a civic group indicated that school-level practice bore almost no resemblance to the initially defined effective school characteristics.

The result of Chapter 1, while very modest, are nonetheless observable across a representative sample of schools that receive Federal funds for the program (Carter, 1984). When a more selective sample of Chapter 1 programs was studied that were selected because they had implemented carefully designed compensatory programs, the measured impact was proportionally greater (National Institute of Education, 1978). It has yet to be proven that any effective schools implementation strategy can have widespread substantial impact on student achievement.

Implementation of the effective schools characteristics is a much more challenging problem than implementing a categorical compensatory program, because the characteristics of effective schools focus on redefining the school's core methods of operation, supervisory relationships, norms, beliefs, etc., thus posing a basic threat to the school as a social institution. Such a fundamental shift is absolutely certain to elicit strong resistance of a variety of types, as the service quality model suggests.

The Current Status of Children at Risk

The past twenty years of educational history are described by some as a period of decline from an earlier golden age in public education (National Commission on Excellence in Education, 1983). However, when one assembles evidence about the quality of services available to children at risk fifteen years ago in 1970, judged against the service quality standards cited earlier, it becomes clear that there were no good old days in our public schools for low-income, minority, handicapped, and female children. For example:

- In 1970, 48 of the 50 states had laws that sanctioned the exclusion of some categories of handicapped students from school, and the estimates of numbers of handicapped children excluded as a result range from 300,000 to 1,750,000 (Children's Defense Fund, 1974).
- By 1968, 689 Area Vocational Education Schools (AVES) had been built using Federal funds. AVESs were highly desirable educational programs because they frequently prepared students for jobs in expanding areas of the economy and had good ties with industry for job placement. Field investigations conducted by the Federal Office for Civil Rights in the early 1970s indicate minuscule minority enrollments in these programs, resulting substantially from discriminatory AVES policies in site selection and admission that excluded minorities (McClure, 1976).

- In the Southwest in 1970, only 11 percent of Hispanic children were receiving either bilingual or English-as-a-second language instruction, from among those judged to need such instruction based on a study by the National Institute of Education (U.S. Commission on Civil Rights, 1970).

- Boys and girls with identical scores on the Kuder Occupational Interest Survey in 1970 could have been recommended respectively for pre-med and nursing courses, according to the survey's scoring guide (Fishel & Pottker, 1977).

Finally, in 1970, Title I of the Elementary and Secondary Education Act had become a de facto general aid program and its intended compensatory nature was recouped only by the initiative of an independent child advocacy organization that published a report about the problem and reform factions within the Office of Education and the Congress (Washington Research Project and NAACP Legal Defense and Education Fund, Inc., 1969; Bailey & Mosher, 1968; Murphy, 1973; Hughes & Hughes, 1978).

We have argued elsewhere in some detail that specific data about service quality from 1970 through 1980 reveal significant marked improvements for various groups of children at risk in access to schools, access to specific school services and programs, coherent response to special students needs, and the availability of educational services shown through research to promote student growth (Moore et al., 1983). Further, we present detailed evidence to support the conclusion that these improvements were stimulated in major respects by Federal and state initiatives aimed at increasing educational equity. Whether or not you agree with each specific comparison made, we hope that you will agree that progress or lack of progress as a result of these Federal and state initiatives should be judged by gauging improvements in service quality for children, not, for example, by asking educators whether they feel particular reforms are burdensome and accepting their answers at face value (Kimbrough & Hill, 1981).

Analysis of service quality for children at risk in the 1980s reveals not only progress, however, but also serious continuing deficiencies in service quality. For example:

- Suspension rates for Black students continue to be twice the rates for White students. The most common reason for suspension from school is absence from school (Moore et al., 1983).

- The clear weight of evidence about the effects of holding students back indicates that such retention, even when accompanied by substantial remediation, is less effective than promoting the student in increasing basic skills development. Yet the use of retention, typically without significant resources for any remediation, is being mandated by state legislatures across the country (Holmes & Matthews, 1984; North Carolina Department of Public Instruction, 1983; House, Lynn, & Raths, 1983).

- While the percentage of Hispanic children receiving some form of special programming responsive to limited English proficiency doubled from 1970 to 1980, 77 percent of those Hispanic children with limited English proficiency were not receiving any form of special programming responsive to their linguistic needs in 1980 (Moore et al., 1983).

- In most school districts, vocational education programs remained overwhelmingly segregated by sex, with females clustered in those programs that prepare them for the lowest-paying jobs (Harrison et al., 1979).

When one looks closely at such data about service quality, then, children at risk, including those low-achieving children that are the focus of Chapter 1, have made some tangible gains since the 1960s, but continue to occupy a very marginal position in our schools. In our own research on student classification, we frequently found that Federal and state programs benefiting various groups of children at risk were the only organized efforts in evidence through which any systematic effort was being made to address the needs of these children (Harrison et al., 1979). Thus, those who are concerned about educational equity should not easily assume that they are confronting an educational system which has fully incorporated into its customary practices an obligation to serve children at risk and which will act to replace programs that have been modestly effective with more effective ones. As argued throughout this paper, Chapter 1 has had limited impact not only because the categorical program strategy has significant short-comings, but because any reform strategy confronts deep-seated organizational, political, and psychological dynamics that frustrate change.

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THE RELATIONSHIP BETWEEN COMPENSATORY EDUCATION AND REGULAR EDUCATION

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THE RELATIONSHIP BETWEEN COMPENSATORY EDUCATION AND REGULAR EDUCATION

Our task is to explore a significant number of compensatory education design issues over the course of our two-day meeting. The agenda moves us from specific issues related to who should be served, by whom, and in what setting, to broader issues about the relationship of compensatory education to regular education. My assignment is to react to the papers and issues associated with the latter topic.

To be more specific, three papers have been prepared for the session. The Allington and Johnston paper reviews studies which examined the status of curricular coordination at district and school levels, between categorical and regular education programs, and among categorical programs. It offers possible explanations for the general lack of such coordination--particularly, given some evidence that such coordination can enhance student achievement. It suggests that current policy is based on such assumptions as:

- There exist several identifiable categories of at-risk children.
- We can identify which child fits which category.
- Children in different categories have different instructional needs.

It argues that current research and experience do not support these assumptions and that the field needs an alternative set of assumptions--for example:

- The task of learning to read is the same for all students.
- Different students need differential opportunities to learn.
- Those opportunities can be provided within the framework of a balanced program.

It concludes with recommendations that Federal policy should:

- emphasize similarity of instructional needs of children served by categorical programs;
- present such programs to schools in a coordinated and coherent way; and

- focus more on "service quality" than on keeping funds separate by programs.

It notes that major shifts in belief structures and in practice will have to occur before the goals of coordinated and coherent programs can be achieved.

The Griffin paper suggests that the purpose of Chapter 1 staff development resources should be to enhance the educational opportunities of Chapter 1 students. To achieve this end, it suggests that such staff development efforts should address knowledge and skills of not only Chapter 1 teachers, but of all teachers working with Chapter 1 students, and that such efforts should address not only instructional concerns, but those contextual aspects of classroom and school that influence how staff work with each other and with their students. It then describes several studies of school-level staff development interventions which have sought to strengthen the overall effectiveness of school and program.

The Hallinan paper presents a conceptual model for explaining variation in effectiveness of Chapter 1 programs. It suggests that explanations for such differences may be found in instructional process variables like content covered (e.g., time allocated and pace), quality of content (e.g., nature of tasks assigned and interest level of content presented), and quality of pedagogy; and in the nature and content of interactions among students--particularly, when they are separated into ability groups. It suggests that such a model can be used to structure future research and to identify practices most likely to foster Chapter 1 student achievement.

These papers address the session topic from quite different perspectives. To comment on those perspectives and how they interrelate, I decided that I had first to explore possible relationships between compensatory education and regular education. I have organized my comments into four sections. I begin by considering two referents for the concept of "regular education." I then examine three approaches for relating compensatory education resources to regular education, and the promise of each for creating the conditions required for all students to learn certain basic skills. I then consider possible implications of my comments for Federal leadership.

Regular Education

The term "regular education," can refer to the commonalities which most schools in America share--for example, most elementary schools organize their children into age-grade groups which are further divided into classes of 25 to 30 children; they then provide each class with an all-purpose teacher; and, in turn, they provide their teachers with a collection of textbooks and related workbooks which, for the most part, define the school's curriculum. A number of studies have been conducted over the years aimed at describing such commonalities--for example, common organizational structures, curriculum and general instructional practices, or practices in specific content areas. The problem with this definition of regular education is that the commonalities described have not been linked to student outcomes.

As an alternative, I recommend a more restrictive construct, "effective regular education." This construct draws on the research over the past fifteen years that has described how student achievement can vary by classrooms within a school and by schools, and that has identified some of those conditions and practices that can be associated with such variation. Some of that research has gone beyond correlational findings to demonstrating through experiments that certain changes in classroom conditions and instructional practices can result in increased achievement. There is also now some evaluative evidence that school improvement interventions based on these results can help schools improve not only achievement, but other outcomes--for example, increased student attendance and reductions in disruptive student behaviors.

Figure VI-1 represents one way to summarize some of the results of current research. It suggests that students are more apt to learn what is measured by basic skills achievement tests if they:

- attend school regularly;

- study content and skills that are appropriate, given their current knowledge and skills, and that are assessed by the basic skills achievement tests;

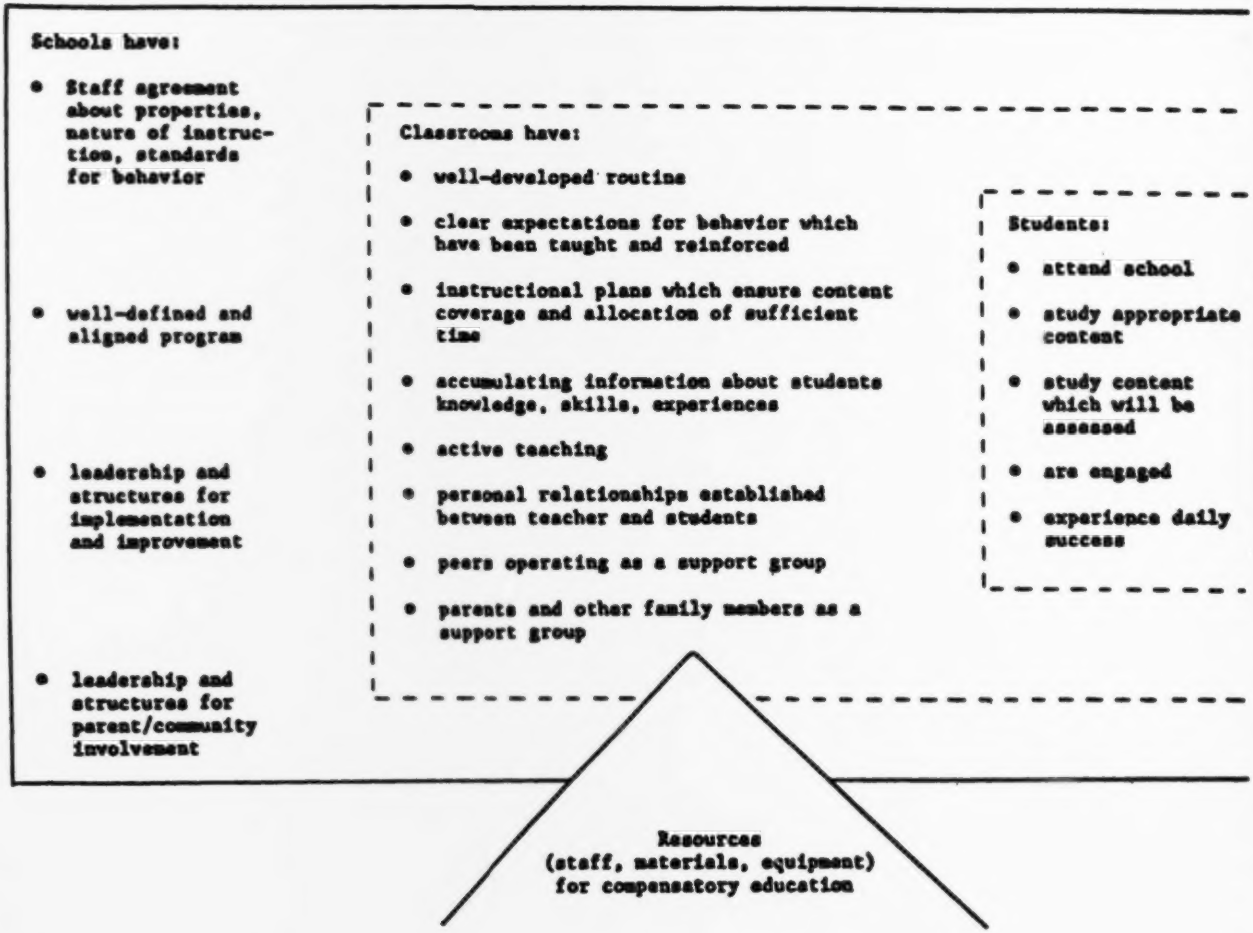
- are engaged in appropriate learning activities for most of the time allocated for instruction; and

- experience a moderately high level of success in their daily work.

Figure VI-1 further suggests that students are more apt to have these experiences if they have teachers who:

- have a well-developed classroom routine and have taught students how to follow that routine;

- have a workable set of classroom rules which define appropriate and inappropriate behaviors, structure



Schools have:

- Staff agreement about properties, nature of instruction, standards for behavior
- well-defined and aligned program
- leadership and structures for implementation and improvement
- leadership and structures for parent/community involvement

Classrooms have:

- well-developed routine
- clear expectations for behavior which have been taught and reinforced
- instructional plans which ensure content coverage and allocation of sufficient time
- accumulating information about students knowledge, skills, experiences
- active teaching
- personal relationships established between teacher and students
- peers operating as a support group
- parents and other family members as a support group

Students:

- attend school
- study appropriate content
- study content which will be assessed
- are engaged
- experience daily success

Resources
(staff, materials, equipment)
for compensatory education

Figure VI-1. Effective Regular Education

and monitor classroom activities to minimize inappropriate behaviors, and respond quickly and consistently to inappropriate behaviors without disrupting class activities or denigrating students;

- plan their year, their instructional units, and their lessons to ensure that important content/skills are covered (particularly, those to be assessed), and that sufficient time is allocated to those topics;
- inform their instructional planning by obtaining and regularly updating information about their students' current knowledge, skills, experiences, and learning styles;
- actively teach the content and skills to be learned by orienting students to the lesson and its objectives, presenting content and demonstrating procedures, providing opportunities to practice both under their guidance and independently, monitoring progress being made by students both individually and as a group, providing continual feedback to students on their progress, and adjusting pace, tasks, and instruction in order to ensure that students experience a moderately high level of success;
- develop personal and positive relationships with each student and communicate their belief that they will learn the content and skills presented;
- use peers as a support group by incorporating peer tutoring and cooperative learning activities into lessons and units; and
- involve parents and other family members as a support group by orienting them to the class' program and providing homework which encourages them to work with their child.

Figure VI-1, drawing on the effective schools research, further suggests that teachers will be more apt to plan, manage, and conduct their classes in these ways if there is:

- strong agreement among school staff about academic priorities, what constitutes effective instruction, what students should achieve, how students should behave, and how time should be spent;
- a well-defined and aligned program which describes the content and skills to be learned, provides instructional resources and suggests instructional activities which can help students achieve those

objectives, and has tests and other tools for monitoring and assessing student progress in achieving those objectives;

- leadership and structures which support teacher implementation of the program, staff use of assessment data, and ongoing improvement of both the program and teaching (e.g., time for cooperative teacher planning, supervision, staff development); and

- leadership and structures which encourage and support parent involvement in support of the school's program.

Brophy's conference paper (for the preceding session) summarizes this research in much more detail. The three papers for this session all reference selected aspects of this research. For example, Griffin emphasizes the role of contextual/school factors and of structures through which staff can work on those factors (e.g., staff development); Allington and Johnston focus on the belief structure of administrators and teachers, the character of the program, and the extent there is leadership and structures for coordination/ implementation; Hallinan's model attends to the character of teacher-student and peer relationships, teacher expectations and how they are communicated, the quality of instruction, and the amount of content covered.

Three Possible Relationships

Ideally, it is into the context of effective regular education that compensatory education resources (staff, instructional materials, and equipment) are introduced. There appear to be three general approaches to using these resources —each of which places compensatory education in a somewhat different relationship with effective regular education.

Compensatory Education as Remediation

"Compensatory education" as the remedial component of traditional basic skills programs is generally based on the following rationale:

- Each child's growth and development is unique.

- The learning of the basic skills is interrelated with a child's growth and development.

- An effective basic skills program tries to deal with this variability by such practices as grouping students, using different instructional materials with those groups, varying the pace at which content is covered, and providing corrective instruction for students who do not learn a skill as a result of the initial instruction.

- However, some student differences (e.g. intellectual development, social-emotional development, physical development, motivation, language, and experiential background) may be difficult to address in the context of the regular classroom.

- Therefore, those students are assigned to remedial classes when those differences can be addressed.

The remedial approach is based on the view that compensatory education compensates for certain inadequacies or disabilities found in students--inadequacies or disabilities that explain why students are not succeeding in regular education. From this perspective, compensatory education is expected to provide two services to regular education. It identifies student inadequacies, and it provides the additional instruction that will enable a student either to overcome them or to develop compensating strategies. The intent of the remediation is to enable the student to benefit fully from regular education.

To be effective, the remedial approach requires theories and technologies for describing student variability in ways which provide direction as to which instructional treatments would be most appropriate and effective, and second, it requires a pool of instructional treatments to deal with the types of student variability identified. Furthermore, this approach assumes close coordination of regular classroom and remediation instruction--coordination which enables teachers to develop a shared understanding of the status of an individual student's learning, to determine the content and function of remediation instruction, and to decide how regular instruction should build upon the learning resulting from that instruction.

Compensatory Education as Alternative Programs

Compensatory education as alternative programs is based on the assumption that some students just cannot succeed in the regular education program and that they require an alternative. The rationale for alternative programs can focus on the severity of the student's disability--that is, a special education perspective; it can focus on inflexibilities in the regular program--that is, the regular program's inability to adapt content, tasks, pace, and setting to student differences; or it can focus on both.

Alternative programs take a variety of forms. They can be a short-term experience (e.g., a bridging year between kindergarten and first grade, a summer school program), or they can be alternatives for part of a school day (e.g., a basic skills center in a secondary school which has no formal basic skills program). They can also be comprehensive alternative programs (e.g., programs for disruptive youth or potential dropouts in a secondary school) that attempt to create a learning environment significantly different from that offered by the regular program.

The more short-term alternatives are designed to return students to the regular program; therefore, to be effective, they need to be coordinated with that program. The more comprehensive alternatives (usually found at the secondary level and only partially supported by compensatory education resources) are frequently preoccupied with just trying to help a student to be productive in an educational environment. The issue of re-entry and coordination are considered only when a student begins to show commitment to learning some of the more important contents and skills. It is interesting to note how descriptions of effective alternative programs echo some of the characteristics of effective schools and classrooms. They have:

- a staff who are committed to developing a warm, caring relationship with each student;
- a clear behavior code which students must adhere to if they are to continue in the program;
- objectives to help students develop formal or abstract thinking skills, and a sense of values and moral direction to their lives;
- a curriculum which is, at times, both problem-centered and experiential;
- an approach to instruction which includes both individualized and cooperative learning strategies; and
- a positive peer culture which has been deliberately developed through admissions procedures, reputations, explicit verbal commitments, use of peer support strategies, planned group activities, and clear group norms.

Compensatory Education as an Integral Part of Adaptive Education

The most radical approach to compensatory education is the adaptive education model. It seeks to integrate fully regular and compensatory education resources. As described by Glaser,

> The underlying assumption of adaptive instruction is that students learn in different ways and at different rates and, as a result, effective school programs require both the inclusion of a variety of instructional techniques and learning experiences that match the needs of each student and the allocation of adequate amounts of time for all students to learn. In adaptive instruction programs, the match between learning experiences and student needs is based on knowledge about each student's learning characteristics, his or her past performance and present level of competence, and the nature and type of learning tasks to be performed. The objective is to bring students' abilities into a range of competence that enhances their capabilities to profit from available learning alternatives. Thus, it is expected that by improving schools' adaptability and students' capabilities, every student will be provided with increased opportunities to succeed in school learning. (cited in Wang & Walberg, 1983, p. 604)

The Learning Research and Development Center (LRDC) of the University of Pittsburgh has tried to develop and implement such a model over the past ten years in a number of elementary schools. Its current model has five components:

- a basic skills curriculum component consisting of highly structured and hierarchically organized prescriptive learning activities, as well as a wide variety of more open-ended exploratory learning activities aimed at increasing schools' capabilities to accommodate individual students' learning needs and interests;

- an instructional-learning management system designed to maximize the use of available classroom and school resources (e.g., curricular materials and students' and teachers' time);

- a flexible grouping and instructional team system designed to increase the flexible use of teacher and student talents, time, and educational resources;

- a data-based staff development program providing written plans and procedures for increasing the capabilities of individual school staff to initiate and monitor the implementation; and
- a family involvement component aimed at optimizing student learning through increased communication and the integration of school and home learning experiences.

Johns Hopkins University's Center for Social Organization of Schools (CSOS) is working on a less elaborate model which combines features of mastery learning and cooperative student learning.

Relative Promise of the Three Designs

All of these designs are struggling with the same fundamental problem: how to configure scarce instructional resources to create the conditions required for all students to learn certain critical content and skills. The remediation approach basically accepts the structure and content of the regular program as givens and uses compensatory education resources to provide supplementary instruction to those students who need more intensive and personalized explanations, guidance, practice, and feedback to master the content of the regular program. From some of the evaluation results of Chapter 1, it could be inferred that this approach is most successful with students who are "moderately low achievers."

The alternative program approach views the regular program as inappropriate for selected students. It therefore uses compensatory education resources to create programs which differ from the regular program. Those differences may be in setting (e.g., small group, smaller teacher-student ratio), in content (e.g., prerequisite skills not covered in regular program), or in instructional activities (e.g., experiential, individualized, cooperative student learning). The promise of these alternatives is suggested by evaluations of some of the exemplary special education programs and by evaluations of secondary school programs for at-risk youth.

The adaptive education approach calls for radical transformation of regular education and the integration of regular and compensatory resources. It asks school staff to:

- accept student variability as a given and to develop an in-depth understanding of that variability;
- adopt as their goal the continual growth and development of all students;

- commit themselves to ensuring that all students experience a moderately high level of success in their daily work;

- develop a shared understanding of just what knowledge, skills, and dispositions students must acquire by the time they leave their school and to agree on just how they will monitor student progress on those goals and objectives;

- adopt a broader perspective of time (4 to 6 years), human resources (teachers, aides, parents, peers), and alternative routes through the content to be covered, in order to discover ways that they can adapt to student differences; and

- invest the time to develop and implement the practices required by the model, drawing on the knowledge and experience of such projects as the ones at LRDC and CSOS.

The promise of this approach is suggested by the results of studies conducted by LRDC and CSOS; however, the feasibility of widespread use of such an approach appears to be limited given the current culture, structure, and resources of schools.

Possible Implications for Federal Leadership

The papers for this session and the conference have suggested possible explanations for why Chapter 1 is having only a modest level of success. Some have focused on variables associated with the day-to-day experiences of Chapter 1 students in both regular and Chapter 1 classrooms (cf., Hallinan, Brophy); some have focused on the curriculum: what understandings, skills, and dispositions students should develop and the implications of those conceptions for instruction, instructional materials, and school organization (cf., Calfee, Romberg); some have focused on structures for helping staff both to implement and to improve the program, the quality of instruction, and the school (cf., Griffin); some have focused on the beliefs that leadership and staff at Federal, state, district, and school levels have about the nature of the problem and about how best to manage and use supplementary resources (cf., Allington and Johnston). That such a review of current research would provide such an array of explanations is not surprising, given the complexity of both the American education enterprise and the Chapter 1 program. To this review, I have added one way of thinking about alternative uses of compensatory education resources.

Given this summary of what current research provides, what alternatives are there for Federal leadership? From my perspective there are two: an expansion of current program improvement activities, or a more far-reaching program of research, development, and dissemination, which incorporates current improvement activities, but challenges directly current beliefs and school structures.

Expansion of Current Activities

Since 1982, Federal leadership has undertaken a number of activities to stimulate Chapter 1 program improvement. These have included:

- a one-year grants program to encourage states to design and initiate program improvement activities;
- a shift in the mission of the Chapter 1 Technical Assistance Centers to helping state and local staff design and implement program improvement activities; and
- the initiation of a Chapter 1 recognition program and the dissemination of information about the selected Chapter 1 projects and their "attributes for success."

From personal involvement in the first activity--namely, helping state Chapter 1 directors in the mid-Atlantic states plan and conduct a one-year project to design and implement a research and development based program improvement process, and providing follow-up assistance to the state of Pennsylvania, which is adapting and extending that process, I can offer these impressions.

- Chapter 1 projects within a state differ markedly in the level of growth they achieve with their Chapter 1 students, as measured by standardized achievement tests.
- Chapter 1 staff found the suggestions drawn from current effective schools and effective instruction research both interesting and reinforcing to current beliefs.
- Chapter 1 staff could be trained to collect information regarding the status of a number of factors drawn from the effective schools/effective instruction research and to use that information to identify areas for improvement.

- Based on the assessment phase of the improvement process, three areas in need of improvement were found across most of the low performing projects:
  - the selection and administration of achievement tests, and the use of data from those tests in instructional planning;
  - the extent to which there was a well-defined and aligned basic skills program which structures the work of both regular and Chapter 1 teachers; and
  - the extent to which there was leadership and structures (cooperative planning, supervision, staff development) to support implementation and ongoing improvement of the program by both regular and Chapter 1 teachers.
- State Chapter 1 leaders believe that they have no authority to observe or judge regular education instructional practices--even when Chapter 1 students are involved.
- State and local Chapter 1 leaders are preoccupied with compliance concerns and the fear of audit exceptions; they, therefore, are very conservative in how they use and manage Chapter 1 resources.
- Under current administrative and resource realities, it is difficult for states and local staff to sustain an improvement process over the several years required for initiation, implementation, and institutionalization.
- Under current administrative and resource realities, it is difficult for states to develop the technical assistance and training capability which is needed to support the implementation of an improvement process.

I have also had an opportunity to review the product of one of the other Federal program improvement activities--namely, the Chapter 1 National Identification Program. That product, Effective Compensatory Education Sourcebook (U.S. Department of Education, no date), summarizes much of the effective schools and effective instruction research, discussing such topics as the coordination of the regular school program and other special programs, professional development, leadership, and instructional practices like interactive teaching, ability grouping, mastery learning, and adaptive learning environments. It also provides descriptions of the Chapter 1 projects identified in 1985 to be worthy of special recognition. Those descriptions highlight how those project reflect current research. Though most of the projects follow the remedial approach, there are examples of projects which are implementing the alternative program approach; though most of the projects focus on reading and mathematics outcomes, there appears in the descriptions and underlying concern with other outcomes (e.g., students' development of a positive self-concept). Overall, the Sourcebook conveys the impression that there are a significant number of Chapter 1 projects that are effectively using Chapter 1 resources to supplement their regular education programs in ways that benefit their educationally deprived students.

From the perspective of current research, these Federal improvement activities are positive steps. However, they are exceedingly modest—particularly, if the intent is to encourage all Chapter 1 projects to produce the kinds of outcomes found in the recognized projects. To achieve this end, Federal leadership needs to allocate more of its energy and discretionary resources to creating the conditions that will stimulate, support, and make effective state and local improvement efforts. Specifically, for example, Federal leadership could help state and local Chapter 1 leaders explore ways they can:

- influence the nature and quality of the regular education program and instructional practice for Chapter 1 students;
- increase the linkage between regular education instruction and the supplementary services funded by Chapter 1 resources;
- balance more effectively their activities for monitoring compliance and their activities for improving program; and
- develop procedures for managing Chapter 1 funds which increase the options regarding how they might be used to supplement the regular education program.

In addition, Federal leadership could more proactively encourage exchange among states about their program improvement activities and their effects, and provide more substantial incentives and resources for both strengthening current activities and extending them to other states.

A Far-Reaching Program of Research, Development, and Dissemination

There is implied in a number of the conference papers that improving the current models of regular compensatory education will not increase substantially the level of success that schools are having with educationally deprived students. What I read between the lines is:

- The public schools are currently failing to teach large numbers of these students critical content and skills, and worse, they are contributing to the alienation of these students from the American society.

- The population of students from low-income/minority homes is increasing rapidly.

- The American society, as we know it, will not survive if the current level of student failure and alienation increases as the population of low-income minority students increases.

- To change the rate of failure, radical change is required in the current school practice and in the beliefs and assumptions upon which that practice is based.

From my perspective, there is growing consensus about the nature, scope, and importance of the problem (cf., May 14 issue of Education Week). What is less clear is in what direction schools should move and what knowledge is available to inform that move. Some of the conference papers suggest alternative beliefs and assumptions (e.g., Allington and Johnston, Calfee), some suggest new conceptions of what it it means to be literate and to know mathematics (e.g., Calfee, Romberg), and some suggest that more attention needs to be focused on the content and quality of the interaction in which teachers and students engage and on the kinds of instructional environments which shape and support those interactions (e.g., Hallinan). Whether such suggestions as these provide an alternative vision of how schools should work with educationally deprived students is for me the major task of the conference.

From the conference papers I have reviewed, I believe that we can produce such a vision and describe the knowledge which supports it. I further believe that such a vision could be the basis for a more far reaching Federal effort which moves beyond current modest improvement activities and involves the educational and research community in a collaborative effort to make schools places in which most educationally deprived students learn the content, skills, and dispositions required to be productive members of the American society.

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